Paper TRADE JOURNAL

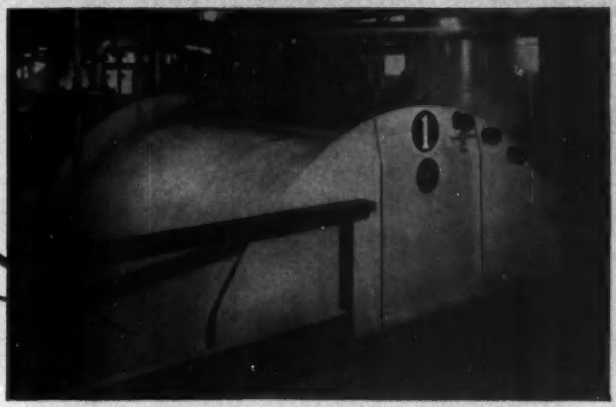
AUG. 3, 1951

KETCHIKAN GETS TONGAS TIMBER TRACT . . . See Page 11

9 NEW DEVELOPMENTS IN SULPHITE PULPING . . . See Page 20

This HIGH-CONSISTENCY PULP SHEET

means cleaner-washed pulp, with more solids in the liquor system



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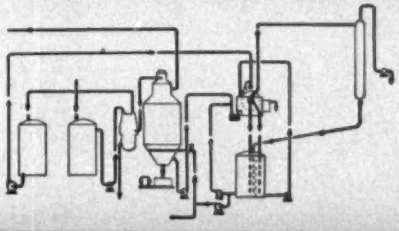

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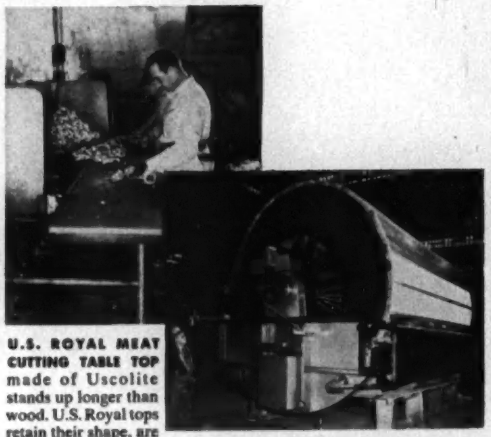

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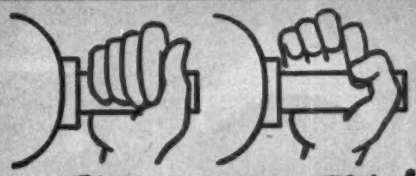

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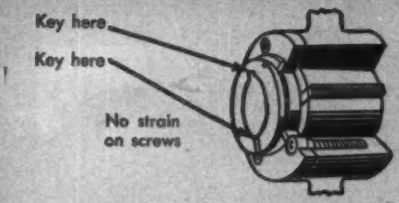

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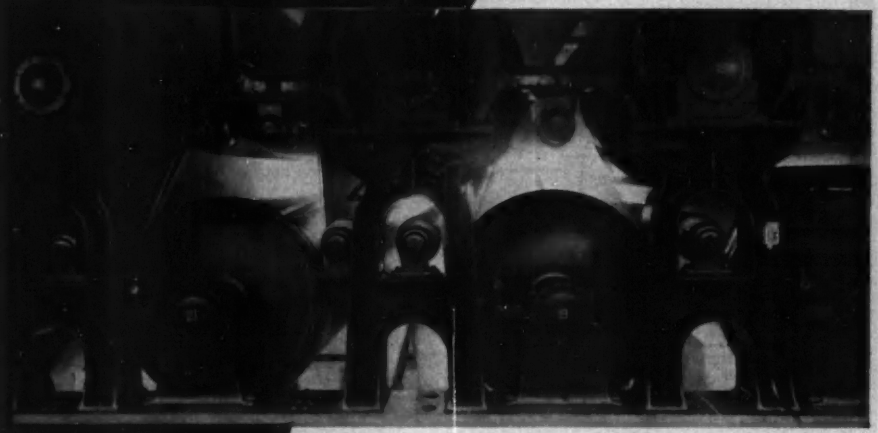

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FOR THE PAPER INDUSTRY

Paper TRADE JOURNAL

VOL. 133 AUGUST 3, 1951 No. 5

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NEXT WEEK

For some interesting and valuable explanations of the several types of D. C. variable speed drives, read "Motor Controls-Rotating, Electronic and Magnetic," by C. P. Croco, Westinghouse Electric Corp., Buffalo, N. Y.

REMEMBER THESE DATES

SEPT. 6-8: American Pulp & Paper Mill Superintendents Assn., New York, Canadian Division, meeting at Saranac Inn, Saranac, N. Y.

SEPT. 14-15: American Pulp & Paper Mill Superintendents Assn., Northeastern Division, meeting at Poland Spring House, Poland Spring, Maine.

SEPT. 14-15: American Pulp & Paper Mill Superintendents Assn., Northwestern Division meeting at Northern Holiday Resort, Marenesco, Mich.

SEPT. 16-19: American Institute of Chemical Engineers, Regional Meeting, French Lick, Ind.

SEPT. 20: American Pulp & Paper Mill Superintendents Assn., Michigan Division, Fall Meeting at Hotel Harris, Kalamazoo, Mich.

SEPT. 26-28: Alkaline Pulping Conference of the Technical Assn. of the Pulp and Paper Industry at the John Marshall Hotel, Richmond, Va.

OCT. 10-12: American Pulp & Paper Mill Superintendents Assn., Southern and Southeastern Div's., George Washington Hotel, Jacksonville, Fla.

OCT. 15-18: 6th Engineering Conference, Technical Assn. of Pulp and Paper Industry, General Oglethorpe Hotel, Wilmington Island, Savannah, Ga.

OCT. 29-31: National Foreign Trade Convention, Waldorf Astoria, New York City.

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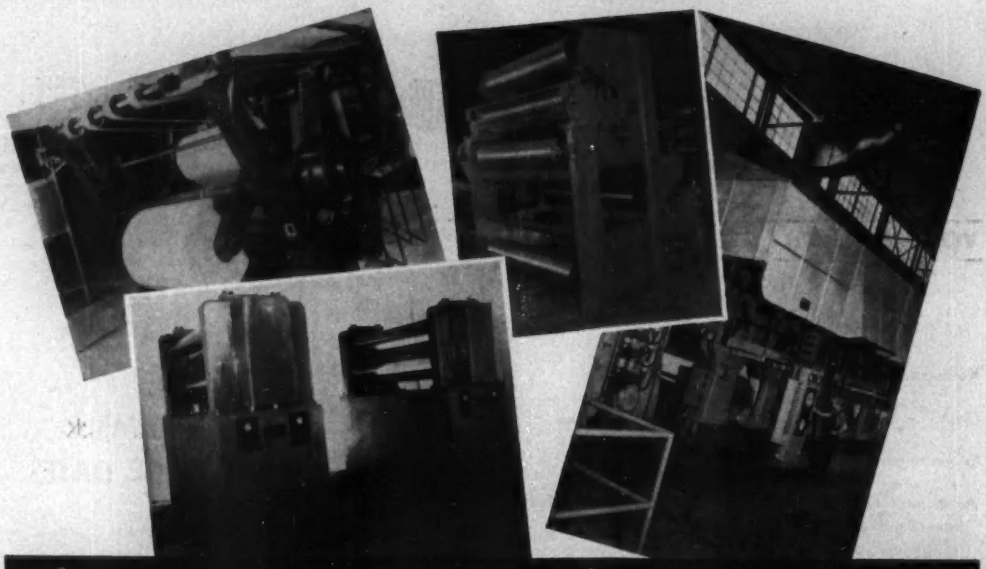

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To increase paper machine output many Southern Kraft Board Mills are going to two-ply board laminating.

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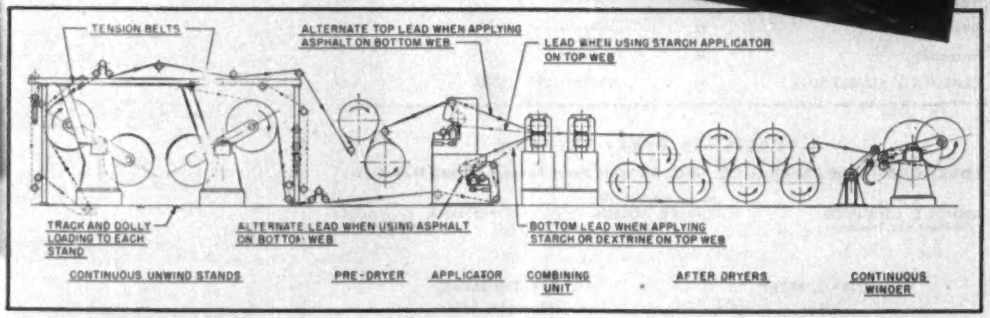
TENSION BELTS
ALTERNATE TOP LEAD WHEN APPLYING ASPHALT ON BOTTOM WEB
LEAD WHEN USING STARCH APPLICATOR ON TOP WEB
TRACK AND DOLLY LOADING TO EACH STAND
ALTERNATE LEAD WHEN USING ASPHALT ON BOTTOM WEB
BOTTOM LEAD WHEN APPLYING STARCH OR DEXTRINE ON TOP WEB
CONTINUOUS UNWIND STANDS
PRE-DRYER
APPLICATOR
COMBINING UNIT
AFTER DRYERS
CONTINUOUS WINDER

Write for Bulletin DK-22.

Dilts (K)

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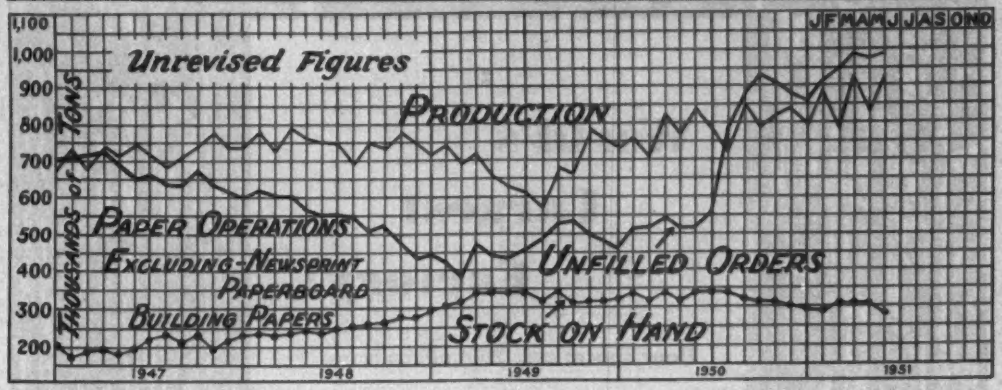

Brief of Important Figures

Source	Production	WEEK ENDING July 21, '51	June 23, '51	July 22, '50
APPA	Paper Production Percent Capacity[3]	100.2	99.4	96.6
	Unbl. Kraft Paper Production Percent	98.3	101.8	95.4
NPA	Paperboard Operating Ratio Percent Inch Hours	94	103	95
		May 1951	**Apr. 1951x**	**May 1950**
APPA	Paper Production[6] (Except Newsprint and Building Papers) ....Tons	921,000	874,087	842,500
	New Orders ....Tons	904,000	906,748	836,000
	Unfilled Orders ....Tons	996,500	1,016,525	535,065
	Shipments ....Tons	923,000	875,577	842,000
		June 1951	**[4]May 1951**	**June 1950**
NPA	Paperboard Production ....Tons	977,214	1,251,633	846,030
	New Orders ....Tons	873,807	1,264,120	855,016
	Unfilled Orders ....Tons	547,963	658,722	394,110
	Our Customers Activities Index[1]	**Latest Mo.[5]**	**Previous Mo.[5]**	**Year Ago[5]**
FRS	Manufactures Total Index	233	232	203
	Durable Mfg. Index	278	278	232
	Nondurable Mfg. Index	196	195	180
	Chemical Products Index	297	297	255
	Mfg. Food Products Index	159	153	157
	Printing and Publishing Index	181	188	169
ODC	Magazine Advg.-Printer's Ink Index	355	338	324
	Retail Sales Combined Adjusted Index	347.6	343.3	315.0
	Drug Index	229.8	231.4	215.9
	General Merchandise Group Index	334.0	326.8	306.6
	Grocery and Combination Index	442.5	437.7	379.1
	Prices Index			
BLS	Consumers Price Index[1]	185.4	184.6	169.3
	Wholesale all Commodities[2]	182.8	183.5	155.9
	Wholesale Foods[2]	187.2	185.7	159.9
	Commodities other than Farm Products and Foods[2]	171.5	172.4	147.6
	Wholesale Pulp and Paper[2]	196.2	196.2	155.4
	Purchasing Power of Dollar, Consumers Prices[1]	53.9	54.2	59.1
	General Activity Index			
FRS	Mfg. Production-Worker Payroll	429.4	433.3	348.0
	Unemployment Compensation Initial Claims (M)	908	983	1,367
	Miscellaneous Carloadings-Thousands of Cars	1,582	1,580	1,423
	Electric Output (Million KW hr.)	35,136	34,431	31,486
PTJ	Average 32 P & P Common Stocks as of July 28	$39.28	$36.65	$29.82

[1] 1935-39=100 Unadjusted Index
[2] 1926=100
[3] New 6-7 day basis.
[4] For Five Weeks.
[5] For details see APPA Monthly Statistical Summary—April 1951 Estimated Figures
[6] Latest Month Available on Request
x Revised figures.

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THROUGH THE HEART OF THE SOUTH

Paper TRADE JOURNAL

TRENDS

Office of the PAPER TRADE JOURNAL,
Tuesday, July 31, 1951.

Paper and Board Markets

No general statement concerning the trend of consumer demand for paper, boards and products today is worth a farthing. It was never more true that the individual characteristics of each market of each of the 11 associated branches of the industry vary by end-use of its products.

Thumbnail sketches from the New York area also may depict special conditions within each company. For their value as market indicators, however they are reported.

Book Papers.—Higher prices on uncoated book papers were announced for early July went into effect on July 23 with OPS approval. Amendment 1 to GOR 13 issued and made effective on that date permitted manufacturers who had announced new list prices under the terms of OPS regulations to start charging them.

Increased costs of raw materials—notably pulps—which may be included in figuring price ceilings under CPR 22 would permit rises in many prices of papers and boards. Under the same provisions, a few integrated mills might have to roll back prices, should the new controls bill permit. Because of this highly competitive market condition, the industry does not expect many price increases. Specialty papers and boards probably will be the exception.

Increases known to be in effect on uncoated book papers are shown on *Prices* page, marked with an ‡ to indicate a change.

Conversion coated book is in much easier supply. Machine coateds are reported as tight, as also are offset. English Finish, mimeo and other sulfite grades. Rag contents are easier.

Paperboards.—While a study of paperboard production statistics—as shown regularly on this page—is valuable as indicator of the trend, under conditions which have prevailed since Korea it is only partial information. The mills still are allotting their customers a portion of their output, and "new orders" heading does not tell how much is new business; it also includes the amount of the backlog that was scheduled for customer allotment.

An increase in production for the week ended July 21 tells of more mills back in operation after vacations. A drop in unfilled orders could also tell of some deferments of allotments. No cancellations have been reported, though boxboards are in much easier demand.

Scattered reports tell of cutbacks in kraft liner production and shifts from linerboard to kraft wrapping. This is not a general condition, however, and needs further checking. It could be true where the end-use was for durables shipping. Where used for packing foods and general utility items, mills have a large backlog and estimate that it will be several months yet before they can get abreast of current demand. Some easing of pressure of demand is noted, however, and progress is being made.

Waste Paper Floor Sags

Though release of an OPS ceiling on waste papers is still said to be in the cards, today's question is rather: "Where is the floor going to be." With the double-assist of heavy collections and a slow-up in mill absorption, prices have begun to sag from the very weight of market supplies.

Low grades are particularly afflicted with *news* in glut condition, mixed grades in heavy supply, and old corrugated weak.

Following on the heels of price drops in Cleveland—where *news* was cut $7 to $15 a ton, Detroit cut all bulkies $2, Philadelphia cut *news* and *mixed* $2. Chicago, *news* $2. Export demand for high-grade pack of *news* had picked up a little of the slack in the local supply, but dealers in the New York market expect a downward move on low grades momentarily.

High grades also are much easier, it is said, with a downturn expected pricewise.

Corrugated Containers (Old Corrugated)

The weakness in corrugated containers—commonly known as *old corrugated*—developed unexpectedly. In short supply before holiday closings in early July, and selling at GCPR ceiling prices, more salvage was being urged by mill representatives.

It came, along with other grades, in a deluge while the mills were shut down, and faster than it could be unloaded, says the ECC. The result was that thousands of dollars had to be paid to the railroads in demurrage charges. Some dealers were notified by the mills to ship no more during July, others were told to hold up shipments until the paperstock could be unloaded, Director Colley S. Baker of the Eastern Conservation Committee reports.

Mill Purchases 43% Ahead. Mill purchases of waste papers during the first two weeks of July were 43 percent ahead of the same weeks of 1950. Consumption during the same two weeks was 29 percent ahead of a year ago.

Of the second week's consumption at eastern paper and board mills, about 32 percent was old corrugated, which is 4 percent over the average for this year and 5 percent above that for all of 1950.

National paperboard production during the same week was down only 18 percent from the weekly production of June, and was 7.5 percent higher than 1950's week.

Mill inventories of *news* and high grades were reported by ECC as the highest since the end of World War II. Present stocks of *mixed* are greater than at any time since the second week of February, 1950; and the volume of old corrugated is greater than at any time since last October 22. Thirty-seven percent of eastern mill stocks are in *news*, 24 percent in old corrugated, 21 percent in high grades, and 18 percent *mixed*.

Waste Paper Use Sets Record

All records for the collection and consumption of waste papers were broken during the first six months of 1951. Paperboard, paper and roofing mills consumed five million tons and paid for them upwards of $250 million, the ECC reports.

Of the five million tons consumed, it is estimated that 1,500,000 tons were *news* grades, approximately 1,500,000 tons were *mixed*, and old corrugated a close third. High grade consumption was 650,000 tons for the first five months of the year.

Cotton Cuttings Market Quiet

Trading in cotton cuttings is reported as dull though prices are still at OPS ceilings. They are being held at this level by the restricted amount of cutting available rather than by demand. Should the garment trade get into fuller production, considerable weakening from ceiling prices is likely.

Rosin Market Stabilizing

Producer endorsement of the ATFA's (American Turpentine Farmer's Assn.) plan to place their gum under government loan for 60 days has had a stabilizing effect on the market, it is believed.

The Association proposed that the gum be placed in the loan and refused for market unless turpentine brings 75 cents or more and rosins sell at 9 cents or higher.

Also urged by the Association is that members hold the accumulated volume from the market until non-production season when it could be gradually released. This action would prevent any wholesale withdrawals and volume offerings at the close of the suggested 60-day period, dated from July 16.

Gum rosin sales on the primary market are extremely light, as a result of the proposal, though increased activity was reported on pale grades. Low bids pricewise were refused, and there is little pressure to sell in the open market. Inquiry is reported as good with further recovery likely. Undertone of the market is firm.—E. P. N.

Paperboard Production (Tons)*

	July 21 1951	July 14 1951	July 22 1950
Production	225,732	200,938	213,031
New Orders	176,346	189,525	227,940
Unfilled Orders	529,320	638,852	501,213

* Source: NPA.

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makes flying splices
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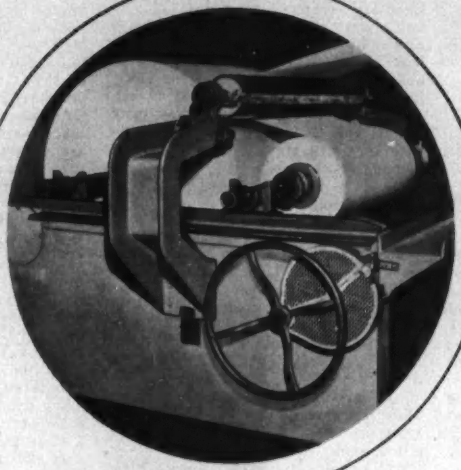

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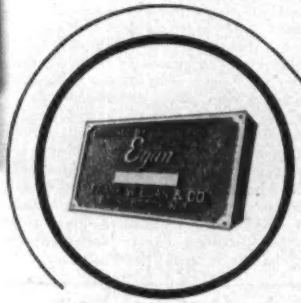
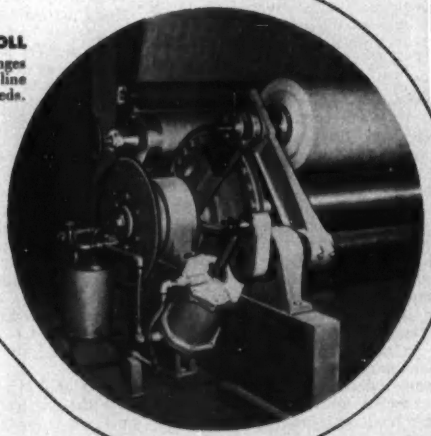


AUTOMATIC REROLL
makes flying changes
at machine line
operating speeds.



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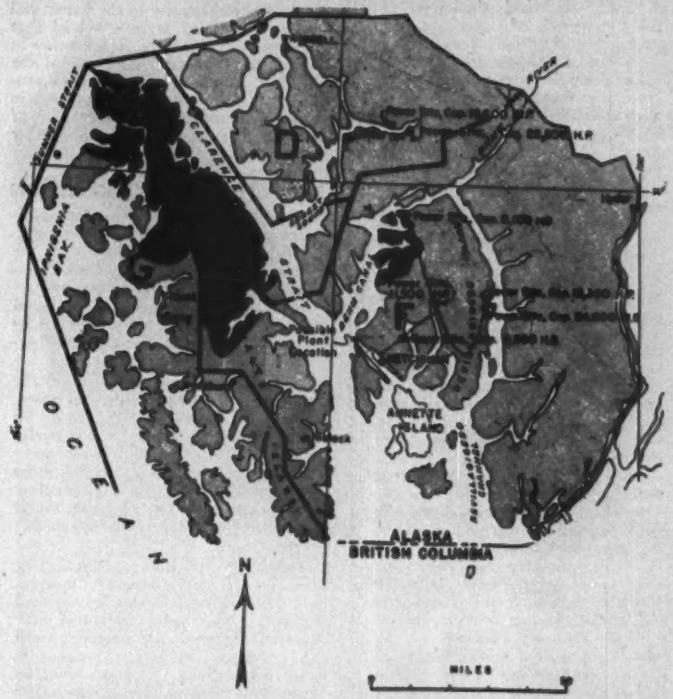
News of the Week

Paper TRADE JOURNAL

KETCHIKAN PURCHASES PULPTIMBER AREA IN ALASKA



The blackened area in the above map shows the 1,500,000,000 cubic foot area of the Tongas National Forest, Alaska, which was taken by the Ketchikan Pulp & Paper Co. The company is associated with the Puget Sound Pulp & Timber Co. of Bellingham, Wash. The dotted area in the map represents the National Forest; the heavy black line the pulptimber allotment boundary.

Largest sale of National Forest timber ever made was completed July 27 by the U. S. Department of Agriculture's Forest Service in awarding a final contract for 1,500 million cubic feet of Alaskan pulptimber to Ketchikan Pulp and Paper Co., Bellingham, Wash. The timber, sufficient to supply a pulp mill of 500 ton daily capacity for 50 years, is located on the Tongass National Forest in southeast Alaska.

Award of the sale means the establishment of a new and permanent industry in Alaska based on harvesting the timber under scientific forest management, according to Lyle F. Watts, chief of the Forest Service. Terms of the contract require construction of a pulp mill of at least 300 tons daily capacity in Alaska by the purchasers. It is estimated that the plant will employ 800 persons when installations are completed. Site for the mill has already been acquired at Ward Cove near Ketchikan, Alaska.

The Ketchikan pulptimber sale is the result of 30 years of effort on the part of the Forest Service to bring the pulp and paper industry to Alaska. A comparable sale and development was on the point of completion when it was blocked by the depression of the early thirties. Providing a stable major industry with year-round operation and employment, the Ketchikan development marks the first step in the opening up of the territory's huge pulptimber resource, the largest untapped resource of the kind on the continent. It is expected to play an important role in expanding the economy of the territory.

Forest Service officials state that this is probably the first of several pulpmills that may be later constructed to utilize in an orderly way the vast timber resources of the Tongass National Forest. Foresters estimate that sufficient timber is available to permanently support 5 or 6 mills of similar size.

Provision for conservation of the natural resources of the area was one of the major features of the timber sale agreement. This includes handling of the timber on a sustained-yield cutting plan, safeguarding of salmon spawning streams so important to the huge salmon industry of Alaska, prevention of pollution and preservation of the significant scenic values.

The sale was made on the basis of a 50-year cutting contract expiring June 30, 2004 A.D., and the company agreed to pay 85 cents per 100 cubic feet for timber cut for manufacture of pulp prior and up to July 1, 1964. For trees intended for manufacture or sale in other forms than pulp or pulp products, such as veneer logs or sawlogs cut in the same period, it agreed to pay $3 per thousand board feet for spruce sawlogs, $1.50 per thousand for cedar, and $2 per thousand for sawlogs of hemlock and other species. After July 1, 1964, and at subsequent five-year intervals, these rates, as provided by the contract, will be reappraised by the Forest Service.

The bulk of the timber covered in the bid is on the northerly portion of Prince of Wales Island. It is 75 percent hemlock and the balance mainly Sitka spruce with some small amounts of Alaska and western cedar.

At press time it is reported that no decision has been made as to when construction will start. It will be either this fall or next spring.

In this joint venture of American Viscose and Puget Sound Pulp & Timber Co., the pulp company will be responsible for the construction and operation, the Viscose Company will be the major consumer. Production will be dissolving pulp, no paper production is anticipated.

WORK STOPPAGE AT DOESKIN

NORTHAMPTON, Mass. — A work stoppage on July 30 was voted by 150 employes of the Mount Tom Doeskin plant, tissue manufacturer, in connection with demands for pay increases. Negotiations between the company — operating three plants — and an independent union have been in progress for several weeks.

Cost Plus Guaranteed Profit

Some of you may have missed Mr. DiSalle's OPS letter to Congressman Brent Spense, Chairman of the House Banking and Currency Committee. It has points in it of which the pulp and paper industry should take note.

Mr. DiSalle is opposed, of course, to the amendment of the Defense Production Act which *would guarantee a profit on every item produced* and sold within the U. S., because of its control program, the impossibility of administering such an amendment and the lack of information within industry to determine what its costs really are.

He points out quite strongly that there are many reasons why a company may want to sell without profit or even at a loss. It is well to note these reasons:

"1. Taken by itself, an item may bring a loss but it still contributes something to covering total cost of a company's operation.

"2. An item may bring a loss at one time but a profit at another time.

"3. A loss item may help by attracting and keeping customers for profitable items.

"4. A loss item may contribute to a company's prestige.

"5. Business in a loss item may be built up over the years to the point where a profit will result—or the company at least so hopes."

Many companies within our industry have at one time or another sold at a loss for some of the above reasons. In so far as can be determined the results have been decidedly bad for all concerned.

The second point made by Mr. DiSalle, and emphasized by an OPA study, shows that industry as a whole does not take advantage of modern cost finding systems. He calls attention to the fact that less than 1 percent of the meat companies have adequate cost records, only about 2 percent of the producers of canned and frozen foods have a cost system, some 10 percent of the lumber companies, and so it goes through many other industries showing records of 5 to 15 percent with adequate cost systems and records.

No comment was made upon the adequacy of the costs systems within the pulp and paper industry. *This raises the question of how well do we compare with the other segments of our economy.* He does, however, use the paper industry as an example of the futility of knowing what accurate costs actually are.

"Each size and thickness and color and grade of paper is a separate item. Many hundreds of them come out of a single 'mix' of paper, made perhaps from pulp wood cut from the firm's own forest lands. What is the cost, and what the reasonable profit for each of these items? What is the value of the pulp wood, and how much of this value is the cost of a particular size of envelope?"

The third point which should be noteworthy to all of us is that the OPS approves of reasonable profits. Its "industry earnings standard" guarantees to every industry that its earnings shall not fall below 85 percent of its earnings in the best three years of 1946-1949. Over and above this *OPS will insure that no major item is produced at a loss, and that no single firm, no matter how high-cost a producer it may be, will be forced out of business by its ceiling prices.*

The passage of a "guaranteed profit" system will certainly be the day when we are well down the road, beyond the turning point, to socialism. Well down the road when the *American free enterprise system has lost its main incentive* which has made it the wonder of the world, *the loss of competition.*

What really is needed is *the chance to make a reasonable profit at reasonable prices. Point one* in this program would be to *cut down on Government civilian expenses,* thus lowering the tax take from all of us. At present, corporations must make about double their profit to make a reasonable return. Uncle Sam, the largest stockholder, takes half before anyone else and he wants *more.*

Henry J. Percy

250 TONS YEAST SOLD

RHINELANDER, Wis.—One of the largest orders for torula yeast ever booked was received this week by the experimental sulphite liquor treatment plant here. Thus far, marketing the large volume of yeast produced has been the big problem for the Rhinelander plant, which at times has had in warehouses as much as 1,200,000 pounds, or six months' total output. This week's sale of 250 tons for dog food exhausted the storage supply.

Torula yeast is produced in this plant which was built by Wisconsin and Michigan sulphite pulp mills to test out a process for reducing stream pollution caused by spent sulphite liquor. Experience up to this time had indicated that the yeast process satisfactorily cuts sulphite pollution. But the cost of operating the plant is so high that a pulp mill could afford to use the process only if it can recover a substantial share of this expense by sale of the dried yeast which is the end product.

BARE REPAIRING RAPIDLY

ROARING SPRINGS, Pa.—The latest reports on getting D. M. Bare back in production after the severe explosion, show that the repairs to the paper mill are moving fast. It is expected that paper machines will be in operation in September. The pulp mill, site of the digester explosion, will be out of production for sometime, depending in great measure, on the allocation of metal to the paper industry and other defense effect factors.

LAUD CHAMPION'S CREDIT UNION

The Chaco Credit Union, Inc., commemorating its thirteenth year of successful service to employees of the Champion Paper and Fibre Co.'s Hamilton division mills and offices, has recently attracted state and national attention in credit union circles by virtue of reaching the one million-dollar mark in assets.

A congratulatory letter over the signature of Champion's president, Reuben B. Robertson, Jr., reads in part: "This represents a wonderful growth and is a splendid commentary of the interest and ability the directors of Chaco have displayed in handling this operation. Obviously, the credit union has been performing a valuable service."

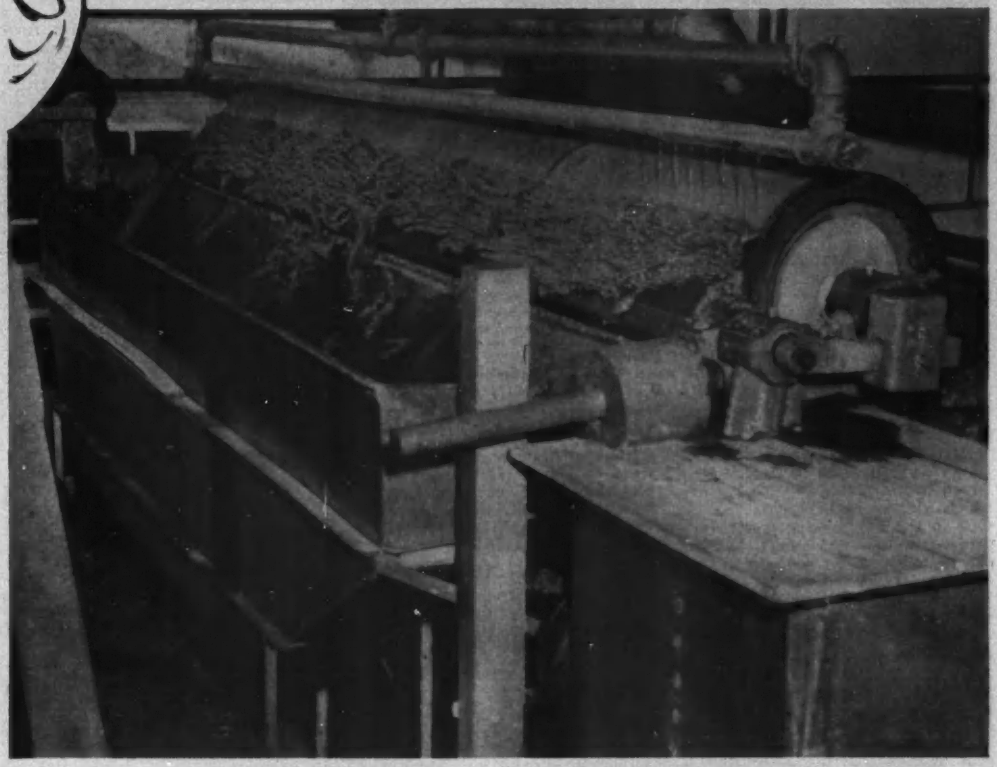
According to Robert Stephenson, president of Chaco's board of directors, "Through thrift and savings, opportunity has been provided for America's progress and prosperity. On this principal, Chaco was founded in 1938, establishing a plan whereby Champion people could help each other to practice thrift and obtain credit at reasonable rates."

PARAMOUNT'S NEW PLANT

Paramount Paper Products Co., Omaha, Neb., have completed a new, one-story, modern printing plant at 4401 N. 23rd street in Omaha; the new plant is now in full operation specializing in printing gummed tape and labels for nation-wide distribution.

Much of their equipment, including high speed multi-color rotary presses, automatic die-cutting machines, step-and-repeat photo-negative devices, and other highly specialized production equipment was designed and manufactured in Paramount's complete machine shop. This equipment and the new, efficient one-floor plant layout has greatly increased the production flow of the organization. In addition to complete production, all preparatory work; designing, art work, engravings, duplicate plates are done in this one self-contained plant.

A SIGHT TO GLADDEN THE EYE OF EVERY HARD PRESSED PAPERMAKER



— good, clean, oh-so-expensive papermaking fibres rescued from the white water and being returned directly to the stuff chest by the

BIRD SAVE-ALL

Is your fibre recovery system adequate and up-to-date? If there's any doubt about it, get in touch with

BIRD MACHINE COMPANY

SOUTH WALPOLE • MASSACHUSETTS

Sign Contract For Israeli Paper Mill

A contract initiating construction of a $3,500,000 paper mill in Israel, first of its kind in the Middle East, is signed by officers of the American Israeli Paper Mills, Ltd., and Merritt-Chapman & Scott Overseas Inc. Joseph M. Mazer, Hudson Pulp and Paper Co. (seated, center), signed as Chairman of the Board of Directors of the American Israeli Paper Mills, Ltd.; others seated are, left to right: Ralph E. DeSimone, executive vice-president and general manager of Merritt-Chapman & Scott, Overseas, Inc., and Robert Szold, chairman of the Board of Directors of the Palestine Economic Corp. Standing, left to right, are: Myles C. McGough, vice-president of Merritt-Chapman & Scott, in charge of the organization's industrial and building construction operations; Aaron Baroway, vice-president of the Palestine Economic Corp., and Julius Simon, president of the Palestine Economic Corp.

MILL FOR MIDDLE EAST

NEW YORK—A contract was signed July 25 initiating construction in Israeli of a $3,500,000 paper mill which will be the first in the Middle East to produce printing and writing paper as well as Kraft multi-wall bag paper. Its two major sponsors are the Palestine Economic Corp. and the Mazer family of the Hudson Pulp and Paper Co., both of New York.

The mill is scheduled to be placed in construction this fall and to be in operation by 1953. It will be owned and operated by the American Israeli Paper Mills, Ltd. The latter, an Israeli corporation with headquarters at Tel-Aviv, was organized early this year by PEC and the Mazer family, with Joseph M. Mazer named as Chairman of its Board of Directors.

The American Israeli mill is initially designed for the production of printing paper, Kraft multi-wall bag paper, semi-fine writing paper and tablet paper, with an annual capacity of approximately 12,000 tons. Exclusive of newsprint and tissue papers, it is estimated that the new plant's output will meet 60 percent of the country's over-all annual paper requirements.

The daily production of the plant will be geared for either 48 tons of semi-fine writing paper, 48 tons of Kraft multi-wall bag paper or 35 tons of printing and tablet paper. All sulphite, Kraft and groundwood pulp used in production will be imported, most of it from the Scandinavian countries. The construction of a mill at the site to produce groundwood pulp from Israeli timber is contemplated.

CHANGE NAME AND ADDRESS

The corporate name of H. A. S. Read Co., Inc., will changed to Propack, Inc. Offices and plant have been moved to Hingham Industrial Center, Hingham, Mass., from 119 Braintree street, Allston, Mass.

P.N.W. WOODS CLOSED

All logging operations West of the Cascades in Oregon and Washington have been closed. A spell of high temperature low humidity weather has caused a serious rise in fires in Clarkamas, Marion, Lane and Benton counties in Oregon.

BROWN'S SAFETY COURSE

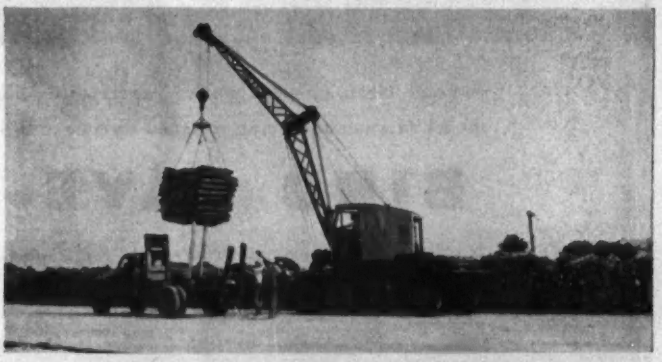
The Brown Co., Berlin, N. H., is going out for safety in a big way. Combining their efforts with Liberty Mutual Insurance Co. to reduce the number of accidents, they have 150 salaried supervisors from all plants attending a Supervisor's Safety Refresher Course which is being held in various locations throughout the company in five separate sessions to better acquaint the men with everything pertaining to Brown Co.'s safety problem. Jack Rodgerson, safety engineer, Dr. Arnold E. Hanson, director of company relations, and Dr. Robert Kaschub, medical director, are assisting Hugh S. Cronin, resident engineer for Liberty Mutual Insurance Co.

J. R. Almand, manager of the Paper Division, originated the unique idea of a flag system to promote safety and good housekeeping at the Cascade mill. Each of the 10 departments will have a flag staff-mounted on top of the Cascade time-office. Department names will appear at the base of the flag. A banner for good housekeeping, and an 8-ball disc for the poorest housekeeping as well as ten safety flags, will be flown. If a lost-time accident occurs in a section of the mill, that department's flag will be changed to a different color and remain on the staff for a period of time, yet to be decided.

PREFERENTIAL PRICE

OTTAWA — Following a meeting in Quebec between representatives of 12 newsprint producers in that area of Canada and Premier Maurice Duplessis regarding possibility of preferential price treatment for Quebec newspapers, it has become known that the Quebec newsprint companies have raised objections to this suggestion of a price reduction.

These objections are now under study by the proper authorities in in Quebec.



For Ease of Handling In Narrow Aisles

A special gooseneck boom is used on a 15-ton Lorain Self-Propelled Crane to unload 5 ft. pulpwood from trucks to storage and later to load rail cars with pulpwood for mill shipment at Edgefield, S. C. 4-part split slings are used to handle the 2½ ton loads for a total of about 303 tons a day.

...inking?

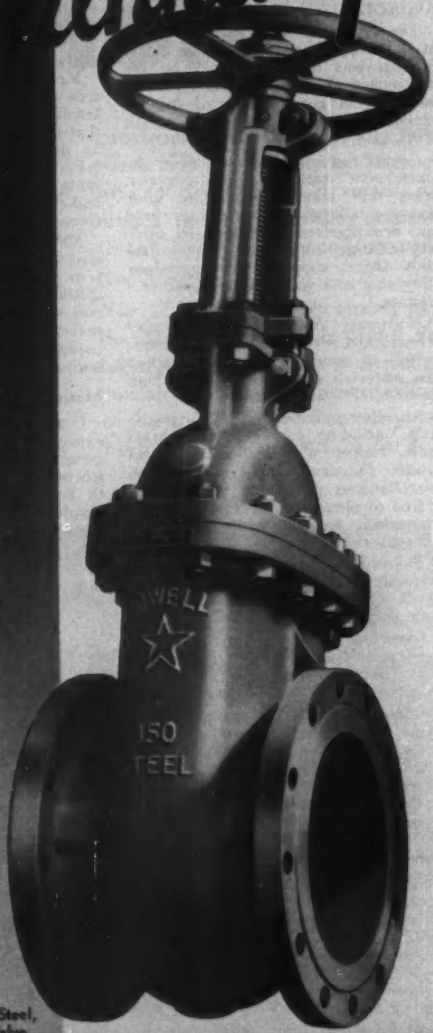


Fig. 1503. Class 150-pound Cast Steel, flanged end, O. S. & Y. Gate Valve.

POWELL

The WM. POWELL CO., 2525 Spring Grove Ave., P. O. Box 106, Station B, Cincinnati 22, Ohio

GOVERNMENT GOSPEL

Allocate Copper Raw Materials

All copper raw materials were placed under allocation by the NPA effective August 1.

The action, an amendment to Order M-16 (Copper and Copper-base Alloy Scrap), was made necessary by the inadequacy of copper raw materials to meet urgent requirements of the rearmament program and civilian needs, NPA said.

Copper raw materials covered by the amendment include refined copper, brass mill scrap, copper-base alloy scrap, unalloyed copper scrap, fired and demilitarized cartridge and artillery casings, copper and copper-base alloy ingot, copper and copper-base alloy shot and waffle, and copper precipitate.

Beginning August 1, only copper refiners and scrap dealers will be permitted to accept delivery of copper raw materials of certain types without specific NPA authorization.

All other purchasers of these materials, including jobber dealers, brass mills, copper wire mills, brass and bronze foundries, ingot makers and miscellaneous producers, will be permitted to obtain copper raw materials by making application for allotment on approved forms.

The amended order also requires that materials accepted as scrap be disposed of as scrap unless otherwise authorized by NPA.

Excepted from this provision are the Army, Navy and Air Force, and those public utilities which re-use obsolescent copper wire and cable.

Other sections of the amended regulation restrict inventories of scrap generators and dealers to 30- and 60-day accumulations, respectively, and extend the ban on conversion contracts (toll agreements) to all parts of the copper industry.

Iron and Steel Scrap Needed

Success or failure of the industrial mobilization program rests largely on the nation's ability to supply the mills and foundries with sufficient quantities of iron and steel scrap to keep production at a high level next winter, according to Manly Fleischmann, Administrator of the NPA.

Addressing a joint meeting of the Iron and Steel Scrap and Iron and Steel Scrap Consumers Industry Advisory Committees, Mr. Fleischmann stressed:

"The combined efforts of Government and private industry are necessary to uncover urgently needed scrap and expedite its flow to the mills and foundries. Latest reports are that the scrap collection is mildly encouraging, but very much more progress has to be made before we get to anything approaching a satisfactory situation.

"Unless the scrap supply improves materially during the Summer months, we may be compelled to revaluate the entire program of expansion of steel production, and possibly we may have to abandon our earlier established goals."

Mr. Fleischmann urged the committees to do everything possible to intensify the search for scrap and see that it reaches the mills and foundries as quickly as possible. He pledged NPA's support of any recommendations which the two committees could make to help the scrap program become a success.

NPA officials said that iron and steel scrap inventories during the first four months of 1951 were down nearly 250,000 tons per month. Inventories, however, improved in May when the inventory was 90,000 tons less than normal and only 44,000 tons less than normal in June.

Mexico Seeks Canadian Newsprint

OTTAWA—A Mexican delegation is expected here shortly to seek an increase of newsprint shipments to Mexico where publishers are understood to be deeply concerned about their supplies of such products. Newsprint imports into that country are reportedly far short of actual requirements of an essential nature.

Canadian Car Loadings

OTTAWA—Car loadings from beginning of 1951 until July 14 advanced to 137,448 cars as compared with 125,021 cars in the similar period of 1950 for woodpulp and paper.

Require Clearance Certificate

OTTAWA—The Department of National Revenue has issued the following instructions with respect to the export of forest products from the Province of Manitoba: On and after August 1, 1951, all manufactured timber, including pulpwood from the Province of Manitoba is to be held for the production of a clearance certificate from the Forest Service, Department of Mines and Natural Resources, Winnipeg, showing that such timber is free to be exported.

C/N issued as of July 16

	Eligible	% Certified
Brown Paper Mills Monroe, La.	$3,160,000	60%
White Star Paper Prescott, Ark.	15,481,201	65%
Hopper Paper Co. Taylorville, Ill.	1,500,000	50%
St. Regis Paper Co. Pensacola, Fla.	12,161,000	60%
Sangamon Paper Mills Kalton, Md.	388,000	50%
Champion Paper & Fibre Co. Pasadena, Texas	45,300	50%
S. D. Warren Co. Cumberland Mills, Me.	3,612,000	65%
Hudson Pulp & Paper Co. Palatka, Fla.	9,000,000	60%

Tank Car Shortage

WASHINGTON, D. C.—Steel shortages are cutting into availability of railroad pressure tank cars for transporting chemicals to essential industries.

By October, NPA reported last week, planned output of this type of car will be five months behind schedule. A production goal of 850 new tank cars per month was established with the emergency, but industry members reported to NPA last week that this schedule has not been met in any month of the first half of 1951. Production drag has been particularly severe in recent weeks.

Fullest utilization of cars now on the tracks was urged by NPA, and a proposal to eliminate cross hauls was taken up, so that a customer would be supplied by his nearest producer, even though the order might have been placed with a producer much farther distant.

Revise Simplified Container Practice

A proposed revision of Simplified Practice Recommendation R146-41, Corrugated and Solid Fiber Boxes for Canned Fruits and Vegetables, has been submitted to the canners, box manufacturers, railroads and truckers, food distributors and others interested, for acceptance or comment.

The current proposed revision was drafted and approved at a recent meeting of representatives of the canners, railroads, wholesale grocers, food chains, and box manufacturers. A simplified list covering standard inside dimensions of boxes, based on number and arrangement of cans in boxes for the 32 standard sizes of cans promulgated in Simplified Practice Recommendation R155-49, Cans for Fruits and Vegetables, is shown in the proposed revision.

Naval Stores Output

WASHINGTON, D. C.—Naval stores output in June included 34,510 barrels of turpentine and 89,600 drums of rosin, 8 and 9 percent respectively, under production a year earlier, the Agriculture Department reported this week.

Rosin output for the first quarter of the 1951-52 season, at 204,610 drums, was about 38,000 under the April-June quarter, 1950.

Definition of Manufacturer

The Office of Price Stabilization amended its general manufacturers' order (CPR 22) to make it clear that the definition of manufacturer does not include a person who merely rebuilds, reconditions, renovates, renews, or otherwise restores a used commodity. The question needing clarification had arisen in the case of engine rebuilders and others, OPS said. Neither CPR 22 nor CPR 30, the machinery order, applies to rebuilders and reconditioners.

For Extra Fine Lubrication-

-use Sinclair Rubilene

Over many years engineers and plant operators have recognized Sinclair RUBILENE® as capable of rendering extra fine lubrication performance in the powerhouse and in the mill.

Sinclair RUBILENE has always been a top-quality oil, as it has been constantly improved through the years, incorporating the latest technological developments in refining and processing. It resists oxidation under continuous high temperatures, and recirculation. It separates rapidly from water, and is non-foaming. Through long periods of use it retains its original qualities, providing uniform, trouble-free lubrication and low maintenance costs.

Yes . . . RUBILENE's finer quality pays dividends in the paper plant. For lubrication counsel, see your nearest Sinclair Representative or write direct to Sinclair Refining Company, 600 Fifth Avenue, New York 20, N. Y.

Rate Adjustment for Motor Carriers

WASHINGTON — OPS last week issued two regulations authorizing local truck services and contract motor carriers to apply to the pricing agency for adjustment of their rates and charges.

SR 40 to the General Ceiling Price Regulation applies only to motor carriers, other than common carriers, such as local pick-up, delivery and transfer services, and permits these to make application for adjustment. Rate increases will be granted only where it can be shown that the "line-haul" carriers are willing to absorb the increases without requesting an increase in their rates, said OPS.

Motor carriers, other than common carriers, were authorized in Supplementary Regulation 39, to also request adjustments in ceiling rates, to allow for wage hikes, and increased material and equipment costs sustained since the latter part of 1950.

Study Management Techniques

WASHINGTON, D. C.—Fourteen management, supervisory and technical officials of various Turkish industries have come to the United States for a six-month study of the principles and techniques of modern industrial management.

The project is sponsored by the ECA under its technical assistance program to spur industrial productivity in Turkey.

The 14 men are representatives of the Sumer Bank, a management agency under the Turkish Government's Ministry of Exploitations. The Sumer Bank operates government-owned plants in such industries as iron and steel, paper, cement, woolen and cotton textiles, rayon and viscose products.

Principles and techniques of modern industrial management are not common knowledge in Turkey, nor is professional instruction available there in this field. The current study will demonstrate to this Turkish group not only the practical application of modern scientific management in U. S. industries comparable to those the group represents, but also the professional instruction methods used here.

Members of the Turkish team, who include planning and production engineers, superintendents and foremen, are now at the New York State School of Industrial and Labor Relations of Cornell University.

Staff members of the school have planned a program for the Turkish group including three months of study and seminars there on the objectives, principles and techniques of modern industrial management.

This will be followed by a one-month series of industrial plant visits to view management operations, and two months of on-the-job observation of application of management techniques with industries corresponding to those of the respective team members.

The Cornell study includes principally the fields of cost control, quality control, methods engineering, production engineering, engineering economy and production planning and control.

Plant visits are scheduled to be conducted for the group in September.

The group in the U. S. now, and their specific interests, include:

From the Sumer Bank Paper Mills in Izmit: Mufit Erenli, operating engineer (corrugated board straw pulp); Sitki Basaroz, foreman (wood pulp and semi-wood pulp); Iskender Cinar, foreman (wood pulp cigarette paper); Zeki Yilmazcan, foreman (wood pulp and semi-wood pulp).

June Newsprint Statistics

Production in Canada (including Newfoundland) during June, 1951, amounted to 464,332 tons and shipments to 475,034 tons. Output in the United States was 94,073 tons and shipments were 97,016 tons, making a total North American production of 558,405 tons and shipments of 572,050 tons, compared with continental production of 529,387 tons and shipments of 530,705 tons in June, 1950, according to the Newsprint Service Bureau. Total output in June, 1951, exceeded that in any June on record.

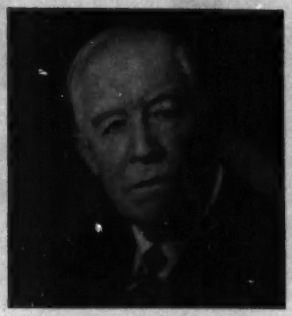
The Canadian mills produced 157,114 tons more in the first six months of 1951 than in the corresponding period of 1950, which was an increase of 6.1 percent. The output in the United States was 65,820 tons or 13.6 percent more than that in the first six months of 1950, making a total continental increase of 222,934 tons, or 7.2 percent more than in the comparable period of 1950.

Stocks of newsprint paper at the end of June were 135,486 tons at Canadian mills, and 7,014 tons at United States mills, making a combined total of 142,500 tons compared with 156,145 tons on May 31, 1951, and 168,031 tons at the end of June, 1950.

PEOPLE

CASSIUS M. BRYAN was elected Chairman of the Board of Directors and F. NELSON BRIDGHAM president of Strathmore Paper Co. July 23. They succeed the late GEORGE E. WILLIAMSON who held both offices. Both men have been with the company many years, Mr. Bryan since 1901 and Mr. Bridgham since 1910.

Mr. Bryan's career at Strathmore has been largely concerned with the manufacturing activities of the company. His lengthly service has extended from his first job in the repair department, through the shipping department to order clerk, finishing room foreman, superintendent in each of the company's mills at West Springfield and then general superintendent of all mills at both West Springfield and Woronoco. He has been a director of the company since 1925 and has held the position of vice-president in charge of production since 1933.



Cassius M. Bryan

F. Nelson Bridgham

Mr. Bridgham has been closely associated with the financial affairs of Strathmore. He has been a director since 1926 and has held the positions of assistant treasurer, vice-president and treasurer. He is also a director and assistant treasurer of Rising Paper Co. of Housatonic; a director and president of the Horace A. Moses Foundation Inc.; director and treasurer of Premoid Products Inc., director and president of Day Lumber Corp., Springfield; and a director of the Old Colony Envelope Co., Westfield.

LEONARD P. TAYLOR, former assistant to the late Leon P. Young, one-time president of the American Writing Paper Corp., has taken a position as sales representative for the Sinclair Co. of this city. Mr. Taylor will cover Pennsylvania, New Jersey, Maryland, Virginia and West Virginia for Sinclair who manufacture paper mill wire cloth and rolls.

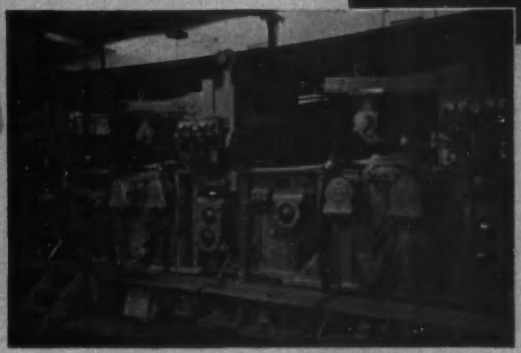
WILLIAM E. HASKELL of Springfield, former salesman for the American Writing Paper Corp. has been appointed small business specialist for the Springfield Ordnance District which covers the four western counties of Massachusetts and the entire state of Connecticut. He will devote his efforts to assisting small business concerns with military procurement.

SWEDEN LEADS THE WAY

Above, aerial view of the mill of A. B. Papyrus, Molndal, Sweden.

Below and right, close-up views of the new Cylinder Machine with Stream-Flow Wet End which started highly successful operation in October 1950.

The forming part of the new machine at Papyrus consists of four Vacuum Stream-Flow Vat Systems with vacuum cylinder molds, 48" dia. x 120" face, Flow Spreaders, Up-Flow Head Boxes, etc. A. B. Papyrus have a total of 15 paper and board machines in operation, making a tremendous variety of products, all of the highest quality.



European Papermakers turn to *Stream-Flow Vat Systems*

A new cylinder board machine with a forming part consisting of four Goldsmith Vacuum Stream-Flow Vat Systems started up in the mill of A. B. Papyrus, Molndal, Sweden, in October 1950. This machine makes the highest quality European type folding boxboards from sulphite and groundwood pulps with an MG finish produced by a Yankee Dryer. It makes a wide range of sheet weights, namely in caliper from .014 to .050.

This is the second highly successful new machine to start operating in Sweden with Vacuum Stream-Flow Vat Systems during 1950. Stream-Flow Vat Systems are now also on the drawing boards for machines to be installed in France and in England.

When Papyrus selected Stream-Flow Vat Systems as the forming part of their new machine, their choice was based on a wide experience. Their satisfaction with the performance of this new machine is a just reward for their decision not to be content with second-best equipment.

Whatever your product may be – test liner, corrugating board, folding boxboards, high-grade boards or cylinder papers, felt or special products – Pusey-jones Stream-Flow Wet End on your new or rebuilt machine will give you the assurance of better sheet quality, higher speed possibilities and furnish economies.

Write or call a Pusey-jones engineer today.

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Ammonium Bisulphite Pulping*

Its Application and Future in Sulphite Pulp Manufacture

R. M. Jones[1] and T. E. Detcher[2]

The Barrett Division Allied Chemical and Dye Corp.

Ammonium bisulphite pulping has long been shrouded in an atmosphere of misunderstanding and conjecture. Though not a new process, until recently it has been little used and generally here has been scant knowledge of the many ramifications of this particular phase of the sulphite process. The objective of this paper is to outline the basic technology of its application and to point out its future possibilities.

Ammonia base pulping may be defined as that subdivision of the acid sulphite process wherein the active pulping chemicals are a solution of ammonium bisulphite in the presence of an excess of sulphurous acid. Compared with calcium base, the process is identical chemically except for the substitution of the ammonium for the calcium ion in the bisulphite.

Historical Background

The first literature reference to the process is a German patent issued to Braun in 1902. The use of ammonia in combination with sulphurous acid was investigated in connection with acid, neutral and alkaline cooking. Until the Cross-Englestad patents[3] of the 1930's and the use of the process in the Toten Cellulose Fabrik in Norway, little consideration was given to the industrial possibilities.

In early 1941, The Barrett Division, Allied Chemical & Dye Corp., became interested in the development of this process. In 1944, a research program was instituted in co-operation with an affiliate, The Solvay Process Division, Allied Chemical & Dye Corp.

Encouraged by the results of this investigation, and with the industrial ammonia supply situation bolstered by the tremendous wartime expansion in ammonia production facilities, Barrett increased its efforts to publicize and develop the process.

A trial run was arranged with Eastern Corp., which resulted in the permanent adoption of ammonia base pulping for its South Brewer, Me., mill in the spring of 1946. The installation at its Lincoln, Me., division followed about a year and a half later.

On the West Coast, the Shelton, Wash., mill of Rayonier, Inc. was converted to ammonia base in 1945. In December of 1949, Crown-Zellerbach Corp. put their Lebanon, Ore., division on ammonia base. In co-operation with the Soundview Pulp Co., they planned to use this mill as a pilot plant for waste liquor disposal.

The most recent plant changeover, and the first full scale ammonia base acid sulphite operation in the Middle West, occurred in the late fall of 1950 when the Wausau Paper Mills of Brokaw, Wisc., converted to ammonia base after a short trial operation.

At present, a number of other plants throughout the country have trial operations or permanent conversions under active consideration.

The growing interest in this process, coupled with its industrial use in several installations, justifies a detailed description of the mechanism of the process and the technology of its use.

Raw Materials

Ammonia, whose chemical symbol is NH_3, exists under atmospheric pressure and temperature as a gas. Nitrogen from the air is combined under high pressure in the presence of a catalyst with hydrogen derived from coke or natural gas. Gaseous NH_3 is formed, which is compressed and cooled to form liquefied anhydrous ammonia.

A pulp mill using ammonia is normally supplied with liquid anhydrous ammonia in tank cars. Because of equipment considerations, substantially all installations unload anhydrous ammonia into water to form an easily stored solution of aqua ammonia, containing usually about 30 percent by weight of NH_3. This aqua ammonia is handled to process in simple equipment and at minimum cost for storage and handling facilities.

Equipment Considerations

Most mills converting to ammonia base pulping will plan to use existing acid making systems insofar as practicable. A milk of lime system in good condition can usually be converted directly, with little alteration except to provide for addition of the aqua ammonia in place of the lime slurry. The Jenssen limestone system can be readily converted by replacing the limestone with efficient inert packing material and providing for aqua ammonia supply. In either case, the acid towers can be expected to show a marked increase in capacity due to the increased reaction rate of ammonia as compared to the calcium or magnesium bases replaced. In addition, the slightly higher solubility of SO_2 in ammonium bisulphite solutions as compared to the present calcium or magnesium base solutions, permits increased acid strengths at comparable equilibrium conditions.

In cooking acid preparation, no basic equipment changes would be anticipated. Over-all system efficiencies will normally be improved, especially in already overloaded systems, due to increased solubility of SO_2 in the acid and also to more rapid absorption. With reduction of overload conditions, existing equipment would become slightly more effective.

In the digester house, the same basic equipment such as instruments, piping, pumps, etc. as used with calcium base can normally be used with ammonia base.

The linings must, however, be given special consideration. Practically any calcium base lining will last for some time after a conversion to ammonia base. A program of replacement can, of course, be set up, with the individual digesters being relined with suitable materials as the need arises, but there will be little possibility of complete replacement being required prior to change to ammonia.

There is actually one instance of a prime calcium base digester lining remaining in service for two and one-half years after ammonia base pulping was adopted. The lining life to be anticipated will average from six months to one and one-half years. The length of time that any calcium base lining *will* hold up depends on its general condition, its length of past service and the characteristics of the original lining materials.

There is every indication that the newer soluble base lining, with its furfural resin joint material replacing the common litharge-glycerine joint, is a better lining than the type encountered

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[1] Mgr., New Products Dev. Sales Agency Dept.
[2] New Products Dev. Dept.
[3] DRP 495, 146 (1930); US 1,878,828 (1932).
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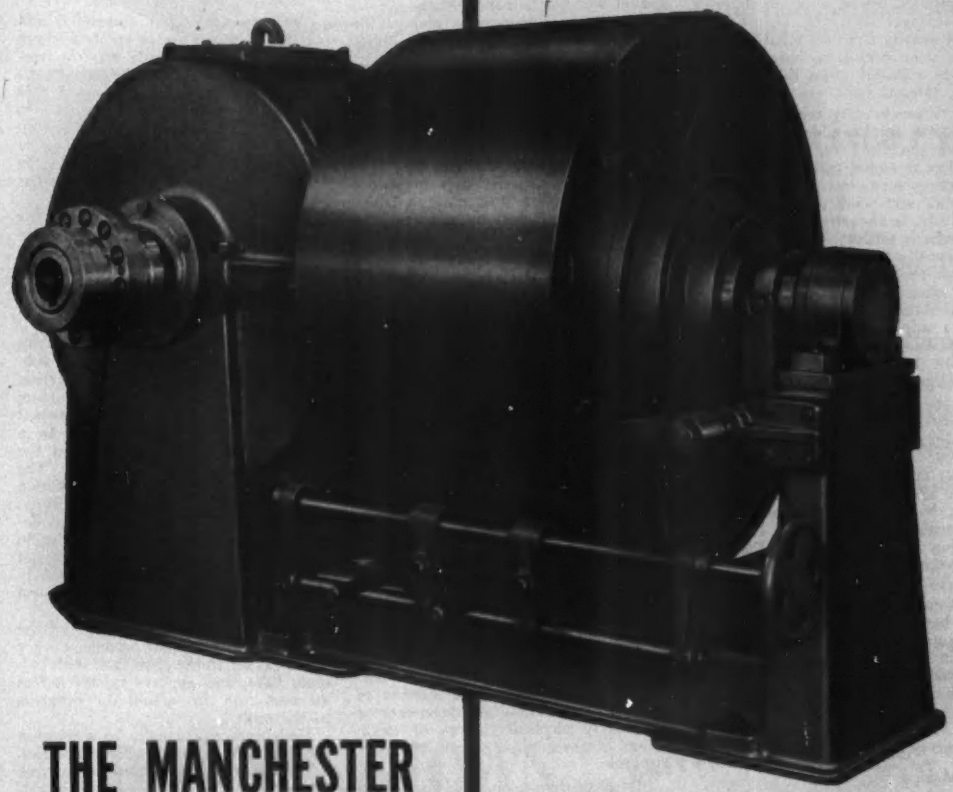

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in most mills at present. Some mills are adopting them for their present calcium base operation, in spite of their higher initial cost as compared to the litharge-glycerine joint linings. This cost differential has been decreasing, however, as litharge and glycerine prices have recently undergone sharp price increases. The prospect of longer life is attractive, and on a long term basis these linings may prove to be less expensive in spite of present higher initial cost.

Linings in accumulators, storage tanks and absorption towers, if in reasonably good condition, can usually be expected to run their normal life after conversion to ammonia base. Replacement with soluble base linings would be in order when normal relining time is reached.

Corrosion

As to the corrosive properties of the ammonia base acid, it has been found wise to replace bronze with alloy steel in such equipment as acid pumps, steam nozzles, tower, tank and digester insert fittings, strainers, etc. Bronze will not usually fail immediately unless in very poor condition, but its life is definitely reduced from that in comparable calcium base service.

Experience to date with the grades of stainless steels used in most mills indicates that stainless piping, valves or fittings in sound condition will give satisafctory service with the ammonia base acid, and will run their present normal life. In those few systems, however, where pitting is extensive and lime deposits fill the pits and prevent complete failure, serious leakage *may* occur when the ammonia base acid cuts these deposits loose. Both calcium (mono) sulphite and calcium sulphate are rapidly dislodged after short contact with this acid.

Discounting the disadvantage of temporary leakage before replacement of faulty stainless steel, this property of scale deposit removal is one of the great advantages of the process. Towers, tanks, piping, strainers, circulation systems, heaters, and blow pit drainer bottoms, are free of troublesome scale, with resulting improved operation in all portions of the plant and concurrent reduction in maintenance costs for scale removal.

In considering conversion to ammonia base pulping in any mill, specific attention must of course be given to the individual system, and the necessary modifications to accomodate the base change. In general, however, the basic alterations which will be required in the average mill have been covered in the preceding paragraphs.

Acid Making

Sulphite mill operation on ammonia base will be substantially simplified as compared to that on the other bases whether using limestone or milk of lime. Substantial improvements in operating procedure and control are found from the acid plant through the digester house.

Unloading of the anhydrous ammonia tank cars to produce the aqua ammonia is a simple procedure, and in most cases can be handled by the acid maker. Elimination of handling of limestone or lime, and operation of the lime slaking plant, and substitution of aqua ammonia piped to the acid system generally reduces the total acid plant labor demand.

The ammonia-base acid system operates ideally where flow metering and flow indication are provided on both ammonia and water supply lines. Employing the usual method of controlling SO_2 burner gas production and concentration, proper proportioning of the ammonia and water results in a completely flexible control and uniformity of raw acid manufacture, within the limits of the chemical equilibrium of the operating conditions. The common difficulties of hot weather acid making are minimized, and it is sometimes possible to maintain year-round uniform raw acid strength conditions.

Operation of the overgas recovery system will not be substantially different except as influenced by changes in relief cycles resulting from modified cooking schedules.

Digester Operation

It is necessary to scan the differences in behavior of the ammonia base acid in the actual pulping reaction to discuss the radical changes that will be experienced in digester operation. These changes in progression of the pulping reaction are due substantially to two properties of the ammonium ion that are not true of the calcium ion, namely:

1. The rate of diffusion of the ammonium ion throughout the mass of the wood chip is apparently much higher than is that of the calcium ion.
2. The ammonium salts of the many acids found in the digester during the cooking process are highly soluble, which is not the case with the calcium salts of these acids.

This high rate of diffusion and the absence of insoluble compounds permit complete and rapid penetration of the chip by the cooking chemicals, and uniform progress of the pulping reaction throughout the wood mass in the digester. The only substantial lack of uniformity that can remain, except in the wood itself, is in the distribution of acid and heat, and in the mechanical arrangement and density of the chip mass. These are dependent on the mechanical arrangements and density of its chip mass. These are dependent on the purely physical factors of circulation, steam admission, and chip distribution.

After the digester is filled with chips, precirculation of acid, which is a brief operation in most mills at present, will probably undergo little change. Elimination of retarded rates due to plugged strainers will probably increase the benefits of the precirculation due to increased rate of flow through the digester. In adition, more chemical will be deposited in the interior of the chip per unit time than with calcium base.

The next step is steaming to reaction temperature, the first critical point on the cooking curve. Many digesters in commercial practice have been brought up to 110° C (on spruce) in half the normal time used on calcium base. It has never been possible in the authors' experience to bring a mill digester up to temperatures so fast as to injure the pulp. In the laboratory where a digester was steamed up in fifteen minutes harmful effects to pulp quality have resulted. Such rapid rise would, however, be impossible in indusrial practice.

The shortening of this so-called penetration period, or time to reaction temperature, reduces the over-all cooking time with ammonia base. In grades where a long penetration period is used, such as Mitscherlich cooking where a slow rise to 110 degrees C is employed, the percentage gains will be greatest. In rapid cooking, which is more common, substantial reductions in time are also experienced.

Once penetration is completed and reaction temperature is reached, there is little reason chemically why the temperature cannot be raised rapidly to maximum, thereby saving time due to rapid reaction at high temperatures. Usually the problem of available top rate of steam supply, and the question of the rate of gas relief desirable in a given system will impose limitations on this rise.

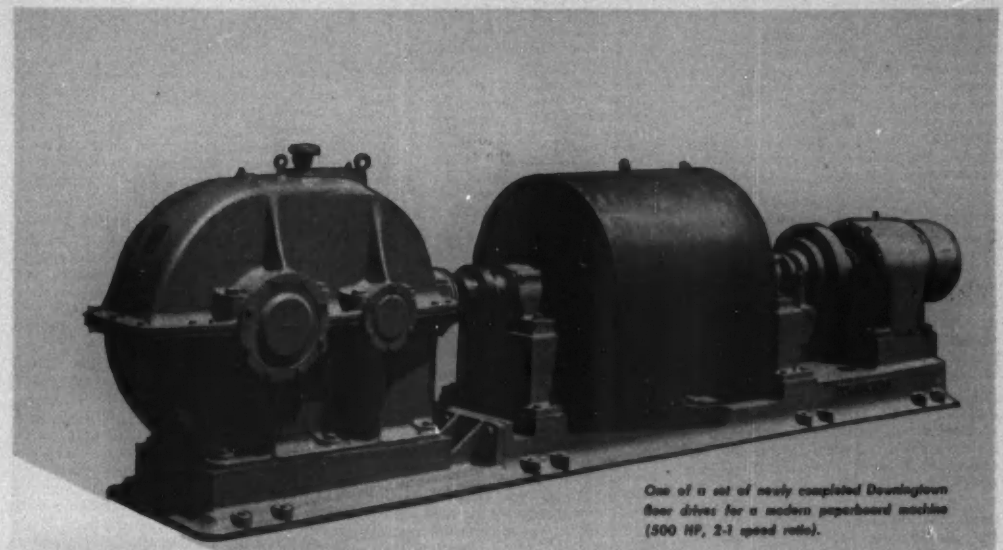
A tendency will also be found for the cooking to proceed at a higher rate for a given temperature, and maximum temperature can usually be reduced. A balance must be struck between the advantages of reduction of time and lower temperature.

Two factors have occurred in commercial practice which serve to substantiate the theory that the reaction rate is more uniform in the ammonium bisulphite process than with present calcium base. The first, noticed by a number of sulphite cooks, is that the relief comes off more uniformly. The quantity of SO_2 expelled is a function of the pressure-temperature equilibria. The rate of release of inert gases depends on the rate of their formation in the pulping reaction. The leveling out of the over-all gas flow is probably associated with more uniform chemical reaction.

The second is that the color of the digester cooking liquor becomes darker much earlier in the cook than with calcium base, and appears to develop at an even rate throughout the progress of the cook.

Endpoints will usually be somewhat different for equivalent bleachabilities, with darker endpoint liquor color and lower total SO_2 blow tests than in calcium base pulping.

In general, conditions tend to vary less from blow to blow, permitting considerably better control of all phases of the operation. In one mill, for instance, it was noted after only a few days' operation on a trial basis that the cooks were able to blow the di-



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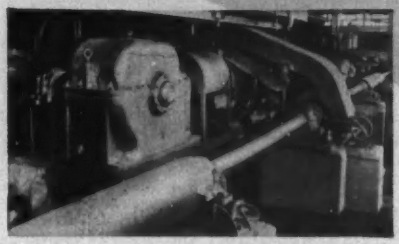

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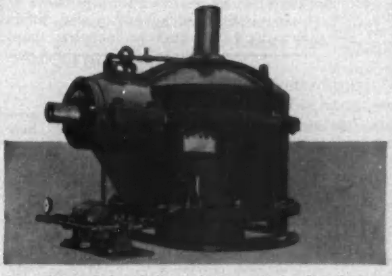

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gesters with much less average variation from the bleachability standard than had been the experience for many years operation on calicum base. Operators become familiar with the modified operation in a short time. The leveling-out of many previously experienced variables appears to reduce sharply the chance for error in control of the pulping process.

Ammonia Base vs. Calcium Base Pulping

Although industrial experience with ammonium bisulphite pulping covers a wide range of pulp grades, certain generalizations can be drawn. Data obtained in one location can be used to predict performance in another, on a relative basis at least.

It is feasible to compare ammonia and calcium base pulping under a hypothetical set of mill conditions based on a composite of several operations. Because of the wide variation in pulping conditions on calcium base, these figures will certainly not duplicate or even approach the conditions in many mills, but almost any suplhite mill will be able to find some of their conditions represented here.

Let us select as this composite mill one which produces 160 A.D. tons per day of bleached sulphite pulp. The operation is integrated with its own paper machines, and produces a variety of printing grades, bonds, and some market pulp which finds its way into many grades. There are four digesters equipped with forced circulation but direct steamed. Hot acid is used, and wood supply is spruce. Knotter screen equipment is relatively new and adequate for the tonnage produced but no excess capacity is present. Flat screens are used for fine screening and are loaded to capacity at existing tonnage rates and per cent screen rejects.

Bleaching is three-stage chlorine-caustic-high density hypochlorite in a moderately old batch system. Pulp is cooked to an average permanganate of 10.0 and is bleached to a G-E brightness of 84-86. Capacity is just adequate, due primarily to overloading of washers.

Many mills should find some conditions within their own experience duplicated in this composite hypothetical mill.

The mill is converted to ammonia base, with the object of increasing production, reducing screenings losses and improving over-all yield, raising pulp quality, and precluding the necessity of adding extensive equipment to accomplish these changes. Wood costs are high and it is particularly desired to reduce wood consumption per ton. Present screenings are higher than optimum, due to acceleration of calcium base cooking schedules to maintain production.

The comparative operating conditions are shown in *Table I*. Some comment is in order as to the significance of these changes. The total SO_2 was kept constant to minimize effect of higher total in cooking, although the better absorption and higher equilibria normally permit an increase in total SO_2. The combined SO_2 was cut, effecting a sulphur saving. This is possible with ammonia base because of the increased efficiency of the combined and because it is unnecessary to maintain so large an excess of combined as needed with calcium base to compensate for its poor penetration. Accumulator temperature was held constant although better absorption equilibria will generally permit slightly increased temperatures if desired.

TABLE I

Comparative Operating Conditions

	Calcium Base	*Ammonia Base*
Cooking Acid		
% Total SO_2	6.00	6.00
% Combined SO_2	1.20	0.90
Temperature—Degrees C	70	70
Cooking Conditions		
Precirculation—Minutes	15	15
Time to 110 Deg. C—Hours	3	2
Time to max. temp.—hours.	6	5
Time at max. temp.—Hours	1½	1¼
Maximum temp.—Deg. C	146	140
Maximum pressure—psig	80	80
Total cooking time—Hours.	7½	6¾

Precirculation time was kept the same on a temperature equalization basis, but this period became more effective in saturating the chips and starting the flow of cooking chemicals to the interior of the chip. The penetration time to reaction temperature, 110 degrees C, was cut from three to two hours, which still left ample leeway for thorough penetration of the chips. With further cuts in time to and at maximum temperature, a total cooking time reduction of one and one-fourth hours was effected. At the same time the maximum temperature was reduced six degrees C.

Pulp of equivalent bleachability was produced in both cases. The time cut gave the required increase in production, and the temperature drop aided in effecting the yield increase, along with reducing steam costs per ton and providing additional pulp quality improvements. This balance between time and temperature reduction is not hard and fast. Where production increases are vital, the maximum temperature may be held constant and the pulp produced at desired bleachability in the shortest possible time. Another mill with ample digester capacity for the maximum tonnage might prefer to reduce the temperature and bleach consumption as far as possible. Wide flexibility in choice of conditions exists, and the best conditions should be selected individually for each mill. The influence of these changes will be readily evident to the operator, who will be able to estimate the over-all influence on production and costs.

In *Table II* are given various pulp quality values to be expected in ammonia and calcium base pulping under the respective pulping conditions given in *Table I*. It is to be noted that if the pulping conditions had been modified without changes to ammonia base, many of the quality factors would have been impaired.

These results are not the ultimate that can be achieved. They have been bettered under similar conditions in commercial practice. Most of the improvement results from the rapid penetration and absence of insoluble compounds in ammonia base pulping.

Although our hypothetical mill did not attempt to reduce its bleach consumption, the permanganate number could have been lowered substantially with little effect on pulp quality. Reduction in bleach demand up to about 20 per cent can usually be made with minor influence on strength properties. Ammonia base pulping permits improved bleachability with less change in strength than with the other acid pulping bases.

There are a number of other gains in actual behavior or the pulp in the system. Favorable increases in drainage rates have been experienced. The pulp will normally screen and wash at a substantially higher rate, increasing the capacity of the equipment. Blow pit drainage also is capable of improvement partially due to improved drainage rates of the pulp itself plus the absence of flow-reducing scale in the drainer bottoms.

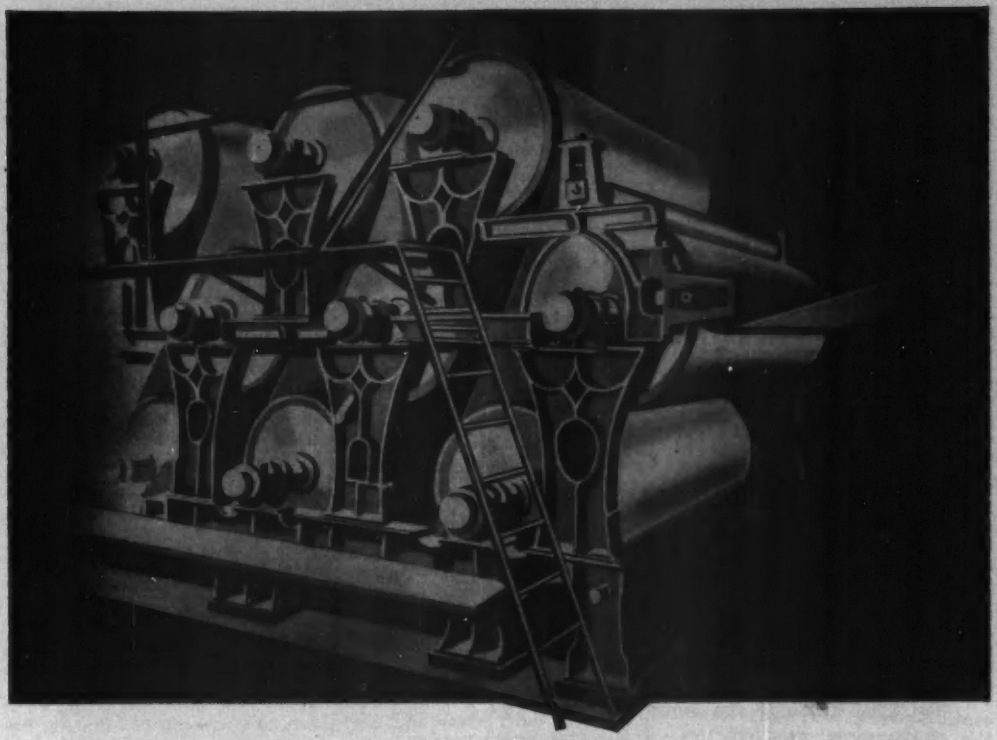
Wood Utilization

There is one extremely important point in connection with a conversion to ammonia base pulping which we have passed over in setting up this composite mill for comparison. Sulphite manufacturers frequently use only spruce as their primary wood supply, with perhaps some hemlock or balsam as they feel their grades permit. The short fiber deciduous woods may be overlooked altogether or used in small quantity so as to minimize lowering pulp quality. Because they are difficult to pulp, woods such as jackpine, maple,

TABLE II

Comparative Pulp Properties

	Calcium Base	*Ammonia Base*
Permanganate Number	10.0	10.0
Pulp Color, bleached—% G-E	85	85
Per cent screenings	2.9	1.2
Total yield—%	45.0	45.4
Screened yield—%	42.1	44.2
Cleanliness-visual	Shivy	Few Shives
Ash—%	0.500	0.290
Alc.-ben. soluble—%	0.70	0.50
Viscosity	.....	Higher
Per cent fines—pass 150 mesh	.....	Lower, 2-3%
Strength Characteristics (Ream 24x36—500)		
At 5 min. beating time:		
Burst—%	123	136
Tear-ratio	1.28	1.33
Tensile—kg.	6.9	7.4
Fold-M.I.T.-D.F.	608	825
Freeness—Can. Std.	675	680
At 35 min. beating time:		
Burst—%	173	177
Tear-ratio	1.07	1.10
Tensile—kg.	8.3	9.1
Fold	1765	3046
Freeness	328	330



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beech and others are not considered although their fiber characteristics may be adaptable to the grades manufactured.

The penetration rate and efficiency of ammonia base pulping open up a new field of money-saving wood utilization. Had we been using, for instance, a partial poplar furnish in a certain bond sheet in our mill, we would expect to be able to increase the amount of this poplar and still be able to upgrade the sheet in many ways. In addition, other woods, both long and short fiber, could be pulped satisfactorily and added to the furnish in proportions to accomplish certain desired gains or changes adaptable to the economic situation and the quality requirements of a particular mill.

Maple and beech, long considered tough customers for the sulphite process, are being pulped commercially with ammonia bisulphite and are being successfully used in paper grades whose requirements were usually regarded as much too high for pulps of this type. The use of poplar ammonia base pulps has been particularly successful in industrial application. Percentages have been increased and most favorable gains in strength and other properties reported.

Jackpine, plentiful in some parts of the U. S. and Canada, has been pulped commerically with calcium base, but the results were discouraging, especially if the percentage of heartwood was high. Temperatures had to be held so low that long cooking time was required. Screenings were high if reasonable cooking times were employed. Strength and color were not of the best. Some recent ammonia base trials on this wood, high in heart, were most encouraging. Moderate temperatures and practically applicable cooking time produced pulps of acceptable strength, cleanliness and color, and with screenings approaching the range of normal sulphite experience on the more commonly used coniferous woods.

The field of applying ammonia base pulping to the so-called undesirable woods is just opening, and much remains to be done by way of mill utilization. Of particular interest where imported spruce is becoming scarcer and more expensive, is the utilization of local wood supplies such as poplar, birch, etc., available at attractive prices. Current investigations offer promise of a vastly increased range of wood utilization with ammonia base with no degradation of quality standards and with a most favorable cost and supply picture.

Papermaking with Ammonia Base Pulp

Because of the many local variables in papermaking technique, it would require much discussion to delve into the application of ammonia base pulps to the paper mill. Commerical experience has shown several substantial improvements to paper mill operation and production, directly related to the conversion to the use of ammonia base pulp. When made to proper specification, it is safe to state that no ammonia base pulp would be expected to exhibit papermaking properties inferior to calcium base pulps. Some changes in stock preparation practice and papermaking methods may be necessary, but most experience shows substantial benefits.

Economic Considerations

The ammonium bisulphite process is attractive economically because it permits a considerable increase in pulp mill output. The capital outlay is small when compared to the expense of the additional digesters that would be required in many mills remaining on calcium base. Mills located in areas of high wood cost have the way opened to utilization of local species previously incapable of application, and of obtaining higher yields from practically all species used, whether imported or local.

The economics of increased production from a given plant are well known. Any increase in productivity in the same equipment will very rapidly reflect a decreased cost per unit of output. In these days of favorable markets, but unfavorable supplies of new equipment, anything that can be done to raise tonnage in an existing plant is of vital interest.

The improvement of product quality standards is never a retrogressive step, even in a seller's market. Any gains at present in this field from the use of ammonia base pulp are long term gains, and tend to solidify a mill's position in what must surely become once again a competitive quality market.

Extension of sulphur supplies is a most important consideration at present. These important considerations must be weighted against the fact that the base costs of ammonia as against limestone or lime will be higher on a delivered-to-mill basis. This differential, predicted on today's prices, will average from $2.50 to $4.00 per pulp ton in most of the important U. S. pulp producting areas. However there are few, if any, mills that would not at least break even on the process. The majority of mills can expect to be definitely ahead of an over-all economic basis, as has been proved in practice. Some time may be required for the many hidden advantages to transmit their effect to the cost records, but a few months' operation will usually show up most of the cost relations that require time to level out, as for instance those figures based on inventories. In some cases, the major economic benefits have been conclusively proved in a matter of a few days' operation.

Waste Sulphite Liquor Disposal

Although the place of ammonia base pulping in the over-all waste liquor disposal picture is a subject in itself, some recognition must be given at this time to the subject as it affects current trends.

The non-scaling properties of the ammonia base waste liquor are a distinct advantage over calcium, as no special equipment to overcome scale formation appears to be required. Critical viscosity-temperature relations of the ammonia base waste sulphite liquor are compensated for in forced circulation or falling film evaporator equipment.

From the standpoint of burning waste sulphite liquor as a primary or auxiliary fuel, calcium base has the disadvantage of introducing the problem of fly ash disposal. This question does not of course arise with ammonia base, inasmuch as the only ash present will be that originally present in the wood and removed from the digester in the waste sulphite liquor. No noxious fumes, with the exception of SO_2, have been experienced to date, as the ammonia decomposes at boiler temperatures and the hydrogen therefrom is burned. The original heat of formation of the ammonia is liberated in this thermal decomposition and combustion.

If the SO_2 from the waste sulphite liquor is expelled from the recovery boiler stack on a 24-hour basis, an air pollution problem may well arise which will require its removal from the flue gases. This is also worth considering from an economic and sulphur supply point of view. To accomplish this in a calcium base mill will be difficult at best, and can also be expected to be rather expensive. It appears from data presently available that equipment and operation costs will be at a minimum with ammonia base, where the ammonia supply to the acid system would be used to strip the SO_2 from the flue gases. The elimination of need to handle base material in slurry form in the absorption system, coupled with the rapid reactivity of the ammonia and SO_2, promise a greatly simplified and cheaper system.

Preliminary work on ammonia base waste sulphite liquor in yeast manufacture indicates that at least part of the nitrogen required to promote the growth of the yeast will be available in the waste liquor.

The value of dried ammonia base waste sulphite liquor as a fertilizer has been demonstrated in investigations pursued by the Barrett Division in cooperation with various agricultural agencies. The market is completely undeveloped and appears to be limited at present to a small portion of the total industry effluent. There are also technical problems involved in preparing the dried solids and putting them in suitable physical condition for use. The subject does, however, merit further investigation as a possible outlet for at least a portion of the waste sulphite liquor now being disposed of in other ways.

At present, ammonia is not recoverable for re-use from the waste sulphite liquor on an economically favorable basis. Lime distillation is possible with high recovery of ammonia, but the over-all cost is unfavorable. Work has been done on the pressure pyrolysis of ammonia base waste sulphite liquor, to recover part or all of the ammonia.

A MESSAGE TO AMERICAN INDUSTRY

"This is more than a shortage . . . this is an emergency.

Every pound of your scrap is needed, NOW!"

"THE STEEL INDUSTRY is currently operating at more than 100% of rated capacity—turning out well over 2 million tons of steel per week. This record high production—every ton of which is in urgent demand—cannot be kept up unless we get more scrap from every potential source. For without your scrap we cannot produce enough steel. Today, every ton of steel turned out requires a half a ton of scrap for its production. That's why scrap—more scrap—is so urgently needed, and needed right away.

"The fact we have to face today is that steel mills are operating on a hand-to-mouth basis as far as scrap is concerned. Some mills are working on only a two-day supply of scrap. We already have had to shut down steel-making furnaces for lack of scrap.

"That's why we are asking you to strain every effort to get more scrap out of your plants and yards and on its way to the mills . . . to search out the scrap that doesn't come to market in normal times. You'll find this "dormant" scrap in obsolete equipment, tools and machinery that you haven't used for years . . . overlooked in your storage sheds . . . or rusting away in a junk pile in some forgotten corner. It's there. Turn it in at once—*so we can turn out the steel you need.* We can't do it without your help."

President, United States Steel Corporation

USS

UNITED STATES STEEL

A special furnace and auxiliary equipment are necessary. No commercially successful unit is available at present, and apparently much more investigation is in order.

As with all the other pulping bases, evaporation and burning of the ammonia base waste sulphite liquor appears at present to be the most generally applicable solution. The possibilities for success of ammonia in this field are well recognized with one commerical installation having been in operation for some time in the U. S. One large West Coast manufacturer is also developing a commerical scale plant, and future results from this work are viewed with considerable optimism. At the present time, considerable attention is beig directed to the subject in the Middle West, and it can be expected that substantial data will soon be forthcoming.

The Future of Ammonia Base Pulping

For some years, the sulphite process has found it increasingly difficult to compete with other pulping processes, and its position had become increasingly precarious financially. Wood for its use has become scarcer and more expensive. The economics have reached the point where only the Canadian and West Coast mills on this continent could remain a large factor in the sales pulp market. Most installations in the U. S. east of the Rockies have had to rely on their integration with a papermaking operation to realize a profit, although there are of course a few exceptions where excesses above company integrated papermaking requirements are placed on the market.

Pressure from governmental agencies for reduction of stream pollution has become increasingly intense, and consideration has been given by several manufacturers by shutting down their sulphite mill or mills and relying on purchased pulp, in view of present manufacturing costs, especially those for wood. The process has increased yearly in its need for some revitalizing influence to offset the growing disadvantages.

While the ammonium bisulphite process cannot be properly termed a panacea for all the troubles of the sulphite industry, it is genuinely believed in a number of quarters that it will at least serve to bolster some of the sagging phases of the process as a whole. The prospect of more efficient and more extensive wood utilization is perhaps foremost among those possibilities.

The comparisons drawn herein have been directed primarily toward the differences between ammonia and calcium base pulping, inasmuch as calcium base is employed in the majority of sulphite operations on this continent. Substantially all the advantages of the magnesium or sodium base processes with respect to improvement in operation, quality, economy and widening of wood utilization are shared in equal or greater measure by ammonium. In addition, ammonia base with respect to waste disposal appears to have advantages surpassing other soluble bases, particularly from the standpoint of initial equipment cost.

As the technology of the process is developed, and the range of its application and extension to our current and future problems is broadened, it appears certain that the ammonium bisulphite process will take a leading position in the manufacture of sulphite pulp.

Development of A System for Neutral Sulphite Pulping*

Tony Agronin

Chief Engr., Shartle Bros. Machine Co.

In this particular discussion on neutral sulphite pulping, we are only considering the treatment of the pulp after digestion. It is immaterial in this discussion as to whether the pulp is prepared in rotaries, digesters or in a combination of steeping tanks and rotaries.

The basis of our particular design follows an installation which we have made in the southern kraft field on a hot stock refining system. Additional data on the development of this system has been done in our Laboratory.

We have found that it is inefficient to attempt to do a complete pulping or refining in any single machine. Experience indicates that every type of machine is most efficient within a rather narrow range of operation. Thus, the most efficient system to do a complete refining and pulping job requires a number of machines, each of which is adapted to handle a specific part of the pulping and refining cycle.

In the system previously mentioned for hot stock refining, we were able to produce a satisfactory pulp at a lower

* Condensation of paper presented before The N. H. Section TAPPI, North Conway, N. H., June 22, 1951.

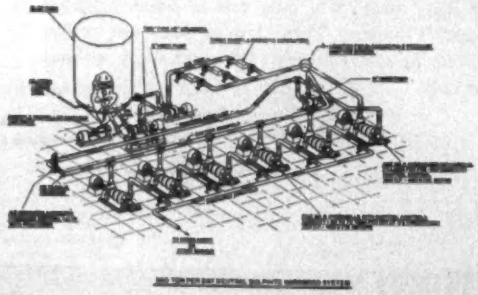


Figure 1

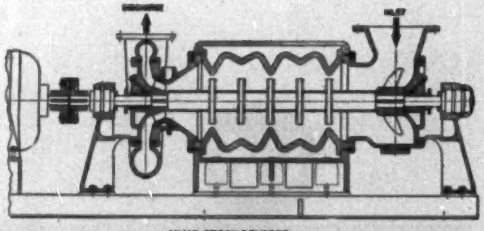


Figure 2

New Names

FOR MONEY-SAVING PRODUCTS

Paper mills now using Hercules' fortified rosin size, or its companion product, a size additive in dry form, report substantial savings and increased efficiency. Some mills have already accepted these products for their regular sizing operations—others expect to follow. We've renamed these successful products, and you will now find them available as:

PEXOL

(FORMERLY DRESINATE® 209)

Fortified rosin size, cheaper to use than conventional sizes. Pexol, formerly known as Hercules Dresinate 209, is highly efficient, particularly where difficult sizing problems are encountered. It is readily available in paste or dry form.

SIZE-AID

(FORMERLY DRESINATE® 211)

Hercules Size-Aid, known to many users as Dresinate 211, is a dry concentrated size additive formulated to increase the efficiency of rosin size. Like Pexol, it is readily available.

HERCULES POWDER COMPANY
INCORPORATED
Paper Makers Chemical Dept.,
962 King Street, Wilmington, Delaware

Hercules' technical representatives will gladly advise you about the use of Pexol and Size-Aid, as well as other Hercules products for paper making.

HERCULES

SIZING MATERIALS AND CHEMICALS FOR PAPER

"PEXOL" AND "SIZE-AID" ARE HERCULES TRADEMARKS

horsepower per ton requirement than any similar system checked by the particular mill.

In a hot stock refining system, even at rather high permanganate numbers, the chips are broken down to the extent where we have had no difficulty in handling them in our No. 6 Hydrafiner; however, on the basis of new cooks for neutral sulphite pulping, we have found it desirable to include an additional piece of equipment known as the "Drubber."

The general layout of a system to produce 300 tons per day is shown in Fig. 1.

As you will note from this system, the stock from the digestion system flows into the Drubber which is actually a series of Hydrapulper rotors operating at a high speed in an enclosed casing as per Fig. 2, which breaks down the chips to a point where they can be handled by subsequent equipment. Two Drubbers are required to handle this tonnage.

ASSOCIATIONS

ALKALINE PULPING CONFERENCE

The Alkaline Pulping Conference of the Technical Association of the Pulp and Paper Industry will be held at the John Marshall Hotel, Richmond, Va., on September 26-28, 1951. Henry Vranian of the Chesapeake Corp., West Point, Va., is General Chairman of the Conference and R. R. Fuller of the Gulf States Paper Co., Tuscaloosa, Ala., is Program Chairman.

A feature of the meeting will be the visit to Chesapeake Corp. and Historical Williamsburg, Va., on September 28.

The tentative technical program follows:

September 26, 1951

GENERAL SESSION

- Available Woody Raw Materials.
- Wood Harvesting Wastes Available.
- Wood Loss in Handling Systems.
- Conveying Systems.
- Checking Wood Quality.
- Effect of Knives on Chip Quality.
- Wood Losses in Chipper Operation.
- Barking, Chipping Hardwood.
- Possibilities in Forest Management.
- Discussion Panel: Wood Utilization and Wood Room.

COOKING PROCESSES

- Coating Ingredients from Tall Oil.
- Effect of Bark in Sulphate Pulping of Slash Pine.
- Continuous Cooking.

September 27, 1951

COOKING PROCESSES

- Cooking of Knots and Rejects.
- Odor Problems in Sulphate Pulping.
- Hard Cooking of Northern Wood.
- Discussion of Controls, Circulation and Indirect Heaters.
- Semichemical Pulping and Wood Species.
- Scandinavian Pulping Practice.
- Cooking Hardwoods by the Sulphate Process.
- Neutral Sulphite Semichemical.
- Discussion Panel.

PENJERDEL 25th ANNIVERSARY

The officers and chairmen of the various committees of the Pennsylvania-New Jersey-Delaware Div. of The American Pulp and Paper Mill Superintendents Assn. met on July 7, at the Hotel Abraham Lincoln, Reading, Pa. Details for the 1951 fall meeting of the Div., scheduled for September 28-29 at Pocono Manor Inn, Pocono Manor, Pa., were discussed at this meeting, and time schedules also were set up for all of the events.

Activities for both men and women will start September 28, at 9:30 a.m., and will extend through the evening of September 29.

Glen Sutton, Sutherland Paper Co., Kalamazoo, Mich., national president, will attend the meeting. Other special guests also are expected to be present.

This meeting occasions the 25th anniversary of the division. The division was founded on February 6, 1926. At the time of its founding, and for some years later, the division was known as the Pennsylvania-New Jersey Division.

NEW YORK-CANADIAN MEETING

The 1951 fall meeting of the New York-Canadian Div. of the American Pulp and Paper Mill Superintendents Assn. will be held at Saranac Inn, Saranac Lake, N. Y., on September 6-8.

According to present plans, the program is to follow the general pattern; no mill visits are to be scheduled. Anyone desirous of making mill visits will be expected to arrange for them personally.

There is to be a golf tournament on September 8. That same evening, there will be a banquet preceded with a cocktail party.

H. A. Horstmann, G. E. Osterheldt, Ives Gehring, H. E. Karberg, and J. J. Rogers were appointed as a nominating committee.

MICHIGAN SUPTS. MEETING

The next meeting of The American Pulp and Paper Mill Superintendents Assn., Michigan Div., will be held on September 20, 6:30 p.m., at the Hotel Harris, in Kalamazoo.

The dinner will be followed by a short business meeting, which will be devoted to the election of officers. Immediately after the election, a certificate of achievement will be given to the past chairman, O. W. Callighan. The speaker of the evening will be L. J. Smith, manager, Gould Paper Co., Lyons Falls, N. Y. His subject will be "The Manufacture of Bleached Groundwood."

FORESTRY MEETING

OTTAWA—Convention of the Forest Products Institute of Canada will be held in Montreal, Que., Oct. 15-16.

REGULATE PULPWOOD TO CAN.

Sale of Maine pulpwood to Canadian consumers is under price regulation, the Maine Office of Price Stabilization told Bangor pulpwood agents in July. Query from Bangor agents brought the answer that OPS regulations are controlling irrespective of where the transaction is consummated so long as the wood is cut from the stump in Maine.

Enjoy Sports and Field Day

The Michigan Division of The American Pulp and Paper Mill Superintendents Assn. held a highly successful and enjoyable Sports and Field Day on July 24 at the Kalamazoo Country Club, Kalamazoo, Mich. One hundred fifteen members and guests were present at the excellent steak dinner in the evening. Sixty-five members and guests participated in the golf tournament. Others demonstrated their skill in lawn games. Pictured above—The Committee: L. to R. Howard L. Vandenberg, A. E. Staley Mfg. Co.; Alfred B. Perlick, Kalamazoo Vegetable Parchment Co. (Chairman); and Fred B. Goodwill, St. Regis Paper Co.

PULPWOOD PRODUCTION COSTS

Pulpwood production costs in southeast Arkansas have more than tripled in the past 10 years. In 1940, it cost $3.45 to cut, load, and deliver a cord of wood to the railroad or mill. By 1945, costs had risen to $7.23. In 1950 they were $11.14.

The report, which is based on a survey of 9 pulpwood cutting operations in southeast Arkansas, states that costs of felling and bucking have doubled in the last ten years. The cost of bunching, loading, unloading, and delay has risen 269 percent, and hauling cost is up 227 percent. Total average cost of delivering wood today is 223 percent more than in 1940.

Mechanization is more complete and equipment is costlier than ever before, Mr. Reynolds notes. Nearly all contractors use chain saws and supplement them with bow saws. The two-man crosscut saw, in general use to about 1943, has almost disappeared.

There is a trend toward larger and more powerful trucks. Up to 1945 nearly all trucks were 1½-ton, but half of those observed in 1950 were two-ton or larger. The average load of wood is 2.5 cords, as contrasted to 2 cords in earlier years. Average one-way haul has increased from 8 miles to about 15. A new expense is the work truck, used to haul woods crews to and from the job.

The 1950 study is the third of a series which the Station, a branch of the Forest Service of the U. S. Department of Agriculture, began in 1940 and has been repeating at 5-year intervals. In comparing the findings of the three studies, R. R. Reynolds of the Southern Forest Experiment Station, concludes:

"Manpower efficiency in 1945 was lower than in 1940, but efficiency in 1950 was again up to the level of 1940. Trucks and other equipment are undoubtedly better than in 1940. The tremendous increase in pulpwood production cost over the last 10 years, therefore, can practically all be charged to greatly increased wages and to cost of equipment. Only a very small percentage of it can be charged to increased length of haul."

WOODS LABOR SHORTAGE

OTTAWA—Department of Labor reports a continued demand for loggers and bushmen exists in Canada, adding that its latest nationwide survey shows there were 10 jobs open in the logging industry for every man applying.

FORESTERS TO MEET IN BILOXI

"Southern Forests—Past, Present, Future" is the theme of the fifty-first annual meeting of the Society of American Foresters to be held in Biloxi, Miss., December 12-15, 1951. Headquarters will be the Buena Vista hotel.

President Charles F. Evans of Atlanta, Ga., will open the general sessions scheduled for Thursday and Saturday mornings, December 13 and 15. He has announced that all foresters and friends of forestry everywhere, whether members of the Society or not, are welcome to attend.

OFFER FIRE PREVENTION PRIZE

The Georgia Forestry Assn. is offering $1,000 as the first prize in a Keep Georgia Green forest fire prevention contest.

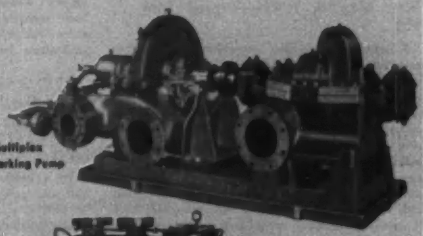
B. M. Lufburrow, executive secretary of the Georgia Forestry Assn., said the county showing the greatest progress in woods fire prevention and suppression during the ensuing nine months will win the cash award. The contest began July 1, 1951, and continues until May, 1952, meeting of the association. The contest is limited to 85 counties which have been cooperating in the fire control system of the association for one or more years.

Purpose of the contest is to reduce the number of forest fires, reduce total acreage burned, stimulate interest in better forest protection and create in individuals a greater sense of personal responsibility regarding forest fire prevention. All counties joining the contest will profit. Prevention of a single fire may save jobs and income far more valuable than the prize. Prize money will be paid the council in the winning county, with the provision that it be spent for the benefit of all citizens of that county.

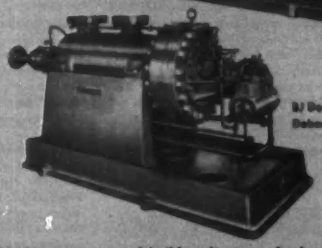
Your debarking PUNCH is only as potent as the pumping MUSCLE behind it...

BJ DEBARKING PUMPS

put real *wallop* into your hydraulic debarking. They have the pressure strength and the operating stamina to work continuously at full bark-blasting efficiency! Multiplex models deliver up to 1600 psi with capacities as required. Double Case models provide pressures up to 2800 psi and capacities to 1 million pounds per hour. BJ Debarking Pumps are engineered to your particular equipment and power set-up. Write for detailed performance data or recommendations on your debarking pumping—without obligation, of course.



BJ Multiplex Debarking Pump



BJ Double Case Debarking Pump

BJ also engineers and builds pulp, screw feeder, and other special centrifugal pumps for pulp and paper applications.

Byron Jackson Co.

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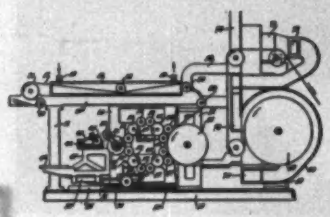
OFFICES IN PRINCIPAL CITIES

Patent Abstracts

● *In addition to abstracts on the technology of pulp, paper and related industries, miscellaneous abstracts which may provide useful information are included.*

U.S. 2,555,536 — Method of Coating Continuous Webs of Paper or the Like. Harry W. Faeber, Larchmont, N.Y., assignor to Time, Incorporated, New York, N.Y. Filed August 1, 1945 — Issued June 5, 1951.



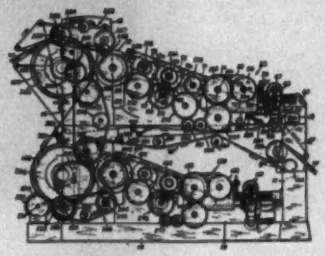
A method of coating a web of paper of the like with a plurality of films of coating material to form a composite, uniformly distributed layer of coating material upon said web, which comprises forming first and second films of coating material, said second film being thinner than said first film, uniformly and separately distributing said first and second films, dividing said first film into a third film and a fourth film, said fourth film being of lesser thickness than said third film, applying said fourth and third film successively to said web, and finally applying said second film to said web.

U.S. 2,555,758 — Wrapping Machine. Frank Webley Noble and Donald Charles Baker, Bristol, England, assignors to The Robinson Waxed Paper Company, Limited, Bristol, England. Filed May 4, 1948 — Issued June 5, 1951.

A wrapping machine comprising means for supplying wrapping paper in continuous web form, a platform adapted to receive said paper web and the article to be wrapped, means for forming the paper web longitudinally into a tube, means for propelling the article along said platform and paper web into said tube, means for sealing the longitudinal edges of the web to each other to complete the tube, means for forming two laterally opposed longitudinal re-entrant folds in said tube, means for flattening said tube in lateral alignment with said re-entrant folds to bring opposed portions of the wall of the tube into facial contact with each other, means for sealing said facially contacting portions of the wall of the tube to each other, sparing and gripping means adapted to embrace the flattened portion of the tube and provide end abutments for two longitudinally adjacent articles, and means for longitudinally moving said sparing and gripping means.

U.S. 2,556,032 — Roller Coating Machine. Harry W. Faeber, Larchmont, N.Y., assignor to Time, Inc., New York, N.Y. Filed October 6, 1947 — Issued June 5, 1951.

A coating machine for webs of flexible material comprising a frame, bearings on said frame, an applicator roller for applying a coating composition to a web and rotatably mounted in said bearings, a back up roller for holding said web against said applicator roller, means to guide



said web into engagement with said back up roller and wrap said web partially around said back up roller, power means to rotate said back up roller to advance said web, means supporting said back up roller for movement toward and away from said applicator roller, a coating fountain, at least one distributing roller for delivering coating composition from said fountain to said applicator roller, means for adjusting said fountain and said distributing roller relative to said applicator roller, and means for rotating said last-named rollers.

U.S. 2,556,333 — Process for the Manufacture of a Novel Binding Agent for Core Sand from Sulfite Lye. Franz Rudolf Moser, Hausen, near Brugg, Switzerland, assignor to Oelund Chemie-Werk A. G., Hausen, near Brugg, Switzerland. Filed February 11, 1948 — Issued June 12, 1951.

A process for producing a binding agent for founders core sand from sulfite lye comprising adding to the sulfite lye a mineral acid in an amount sufficient to more than neutralise the basic constituents of the lye and which brings about carbamization of the sulfite lye during subsequent baking of the core.

U.S. 2,556,341 — Collapsible Paperboard Bottle Carrier. William A. Ringler, Wayne, Pa., assignor to The Gardner Board and Carton Co. Filed October 16, 1947 — Issued June 12, 1951.

In a bottle carrier including a body having side and end walls for surrounding an assembly of bottles, a central longitudinal partition terminating substantially in the plane of the top edges of said side and end walls, and lateral partition elements extending between the side walls and the central longitudinal partition and having attachment portions lying along said central longitudinal partition, a wire handle element having reversely bent legs for engaging said central longitudinal partition, said central longitudinal partition being slotted to receive said handle element, said slots being elongated and lying substantially within the lower half of said central longitudinal partition, said lateral partition elements contacting said central longitudinal partition adjacent said slots with said attachment portions extending in the direction of said slots and secured to said central longitudinal partition in the areas above said elongated slots, said legs passing through said slots in said central longitudinal partition and serving to clamp together said central longitudinal partition and the attachment portions of said lateral partition elements.

U.S. 2,556,707—Convertible Shipping Carton and Self-Feeder. Warren C. Rendall and Fred L. Rushing, Tampa, Fla., assignors to Gaylord Container Corporation, St. Louis, Mo. Filed December 31, 1948 — Issued June 12, 1951.

The combination set forth in claim 1 wherein said two first mentioned opposite side walls are cut along the upper edges of said flaps and thence downwardly to the bottom of the carton to provide flaps constructed and arranged to be swung outwardly to form said openings and to extend upwardly and outwardly beneath said flaps in the trough-forming positions thereof.

U.S. 2,556,772 — Coating Material Spreader for Strip Material. Benjamin Carter Newlove, Pasadena, Calif., assignor to Clarence W. Morse, Santa Monica, Calif. Filed August 31, 1946 — Issued June 12, 1951.

A device of the character described comprising a pair of blocks having opposed operative faces, each face comprising an upper flat surface and a lower downwardly and outwardly angled surface, said surfaces meeting at a transverse line intermediate the height of the block, said upper flat surfaces cooperating to form a uniform passage for a web having a viscous coating on each side thereof and said angled surfaces defining a lead-in throat for said passage, members carried by the opposite sides of one block and overlapping the opposite sides of the other block to define the sides of said passage and throat, means independent of the surfaces of the blocks for adjusting spacing the operative faces thereof, said means being carried by one block and having impinging engagement with the other, and means resiliently urging the faces of the blocks toward each other, as spaced by the adjusting means, to place like mechanical pressure on both viscous coatings whereby said pressure on the coatings centers the web in the passage.

U.S. 2,556,915 — Reinforced Carton. Reynolds Guyer, St. Paul, Minn., assignor to Waldorf Paper Products Company, St. Paul, Minn. Filed June 19, 1946 — Issued June 12, 1951.

A carton comprising a series of panels foldably connected together, the end panels of the series being arranged in overlapping relation and adhered together to form a double thickness panel, end flaps on said panels at least one end thereof including end flaps on both of said overlapped panels, said end flaps on said overlapped panels being adhered together, an auxiliary reinforcing panel underlying a second panel of said series, said reinforcing panel acting to reinforce said second panel, and end flaps on said reinforced panel underlying and adhered to the end flaps issuing from said second panel, the remaining panels being of single thickness.

U.S. 2,557,011 — Corrugating Roll Lubricator. Albert F. Shields, Forest Hills, N.Y., assignor to S & S Corrugated Paper Machinery Co., Inc., Brooklyn, N.Y. Filed March 17, 1948 — Issued June 12, 1951.

A lubricating device for a pair of corrugating rolls comprising a source of lubricant; a source of steam; apparatus for mixing the lubricant and the steam; a conduit parallel to the corrugating rolls; said mixed lubricant and steam being directed into said conduit; openings in said conduit; means for directing said openings toward a selected corrugating roll; said conduit being rotatable on its axis to direct said openings toward a web adjacent the corrugating roll.

U.S. 2,557,025 — Denture Liner of Bibulous Paper Impregnated with Vinyl Resin. Maurice B. Brand, Chi-

When you 'go gunning' for high costs . . . .

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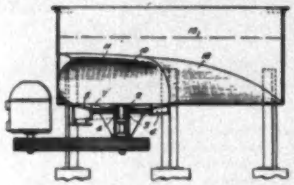
cago, Ill. Filed September 9, 1949—Issued June 12, 1951.

A denture liner consisting of thin bibulous paper impregnated with a mixture of (a) a vinyl chloride-vinyl acetate co-polymer resin containing about 87% of vinyl chloride and about 13% of vinyl acetate and having an intrinsic viscosity of about 0.24, (b) vinyl acetate resin having an intrinsic viscosity of about 0.39, (c) vinyl acetate resin having an intrinsic viscosity of about 0.11, there being about five times as much of said resin (a) as of said resin (b), and about one-half as much resin (c) as resin (b); and a sufficient amount of a plasticizer to keep the said mixture soft and pliant.

U.S. 2,557,174—Apparatus for Pulping Paper Stock. Edwin Cowles, Cayuga, N. Y., assignor to The Cowles Company, Princeton, N. J. Filed January 26, 1949—Issued June 19, 1951.



Apparatus for defibering paper stock, comprising, in combination, a tank, an impeller mounted for rotation within said tank, means on said impeller to discharge stock outwardly from the periphery of said impeller, and a baffle wall within said tank, said baffle wall extending upwardly from the bottom of the tank, and being spaced outwardly from the periphery of said impeller and extending across the path of the stock discharged from a portion only of said impeller and deflecting the stock discharged thereagainst in an upward direction, one end of said baffle wall being joined to the wall of the tank, and the other end of said baffle wall being spaced from the wall of the tank.

U.S. 2,557,299—Urea-Formaldehyde Paper-Treating Compositions. James C. Lehr, Denis J. O'Flynn, and Reade Y. Tompson, Wilmington, Del., assignors to E. I. du Pont de Nemours & Company, Wilmington, Del. Filed March 9, 1950—Issued June 19, 1951.

An alkali metal diglycolate-modified urea-formaldehyde condensation product.

Can. 474,168—Valved Bags. Norman E. Weeks, St. Louis, Missouri, U.S.A., assignor to Bemis Bro. Bag. Company, St. Louis, Missouri, U.S.A. Filed July 29, 1948—Issued June 5, 1951.

A valved bag comprising a straight-cut mouth having a folded-in valve flap extending into said mouth, said flap having inside and outside faces, and in inward marginal edge which is continuous with the straight-cut mouth portion, a single-ply valve sleeve comprising a sheet of flexible material adhesively attached adjacent one of its ends to one of said faces and adjacent to said inside margin, said sheet being folded back upon itself so as to have a portion which extends inwardly a substantial distance from said marginal edge and a portion doubled back over said inwardly extending portion and the adhesive attachment and extending out through the valve flap, so as to provide space within the inwardly extending portion to accept tucking-in of said outwardly extending portion.

Can. 474,207—Carton Folding Apparatus and Methods. Heinz Ahlmeyer, Tappan, New York, U.S.A., and Whitney D. Sherman, West Nyack, New York, U.S.A., assignors to Robert Gair Company, Inc., New York, New York, U.S.A. Filed August 5, 1948—Issued June 5, 1951.

Apparatus for folding an elongated blank of sheet material to form a bottle carrying carton which comprises means for feeding said blank through a folding machine in a direction at right angles to the longitudinal axis of the blank, means for forming transverse folds in said blank at spaced points intermediate the ends thereof, means for forming bottle pockets in said blank adjacent said folds, and means for folding and securing together the outer ends of said blank with the bottle pockets on the outer sides thereof.

Can. 474,235—Dusting and Polishing Paper. Hilton I. Jones, Wilmette, Illinois, U.S.A., assignor to The Munising Paper Company, Chicago, Illinois, U.S.A. Filed January 5, 1950—Issued June 5, 1951.

A combined dusting and polishing paper comprising a substantially size- and filler-free absorbent paper sheet characterized by high wet and dry strength and high oil and water absorbency and having substantially uniformly distributed therein a mineral oil; a flexibilizing agent consisting of a polyhydric alcohol; and minor amounts of a long chain fatty acid partial ester of a hexitol anhydride, a polyoxyalkylene derivative of a long chain fatty acid partial ester of hexitol anhydride, and a polyoxyalkylene derivative of a long chain fatty acid monoester of a glycol, said fatty acids having at least 6 carbon atoms, said paper sheet being soft and cloth-like, substantially dry to the touch, and capable of further impregnation.

Can. 474,275 — Partitions for Containers. Louis W. Roselius, Lake Success, New York, U.S.A., assignor to S & S Corrugated Paper Machinery Co., Inc., Brooklyn, New York, U.S.A. Filed May 25, 1948—Issued June 5, 1951.

A cellular structure comprising a plurality of waved double face corrugated boards each having a succession of waves producing oppositely directed successive troughs and a plurality of flat double face corrugated boards, the flat boards and the waved boards alternating in the structure, the flat boards being connected to the crests of the waves of the waved boards.

Can. 474,369—Head and Shell Joints for Drier Drums. Lloyd Hornbostel, Beloit, Wisconsin, U.S.A., assignor to Beloit Iron Works, Beloit, Wisconsin, U.S.A. Filed October 23, 1946—Issued June 12, 1951.

A head and shell joint for drums comprising a cylindrical drum shell having an inwardly projecting rib around the inside thereof with a reentrant inner side face and a flat inner peripheral wall, a circular drum head having a flat outer peripheral wall press fitted into said rib on said inner peripheral wall thereof and having a radial flange portion bottomed on the outer side face of said rib, said drum head having a recessed inner face portion radially inward from said outer peripheral wall thereof and surrounded by a shoulder parallel to said outer peripheral wall, said head having bolt holes therethrough parallel to said outer peripheral wall and lying between said wall and shoulder, a plurality of clamps in said shell having segmental circular contours struck from a radius centered on the center of the circular drum head, each clamp having a multi-apertured central web portion with parallel legs extending from one end face thereof respectively toward said rib and snugly fitting into said shoulder of the head, said legs having thrust faces parallel to and respectively overlying the reentrant inner side face of said rib and said recessed inner face of the drum head, bolts having heads overlying the outer face of the drum head and shanks extending through the bolt holes of the drum head and apertures of the clamps, gaskets on said shanks between the bolt heads and outer face of the drum, and nuts threaded on said bolts thrusting against the webs of the clamps to draw the thrust faces of the clamps tightly against the reentrant face of the rib and the recessed inner face of the drum whereby said drum head is securely fitted to said shell and said clamps cooperate with the reentrant face of the rib and said shoulder of the drum head to resist radial expansion of the shell away from the drum head.

Can. 474,451—Display Cartons. Kenneth T. Buttery, Kalamazoo, Michigan, U.S.A., assignor to Sutherland Paper Company, Kalamazoo, Michigan, U.S.A. Filed January 6, 1949—Issued June 12, 1951.

A display carton formed of an integral blank and comprising a bottom, side walls hingedly joined to the side edges of the bottom and provided with inturned cover supporting flaps at their upper edges, outer rear wall members on the rear ends of said side walls having overlapping interlocking engagement, an inner rear wall hingedly connected to the rear end of the bottom and disposed on the inner side of the outer rear wall members and supported thereby and having laterally spaced inverted U-shaped slits and a transverse score line joining the slits at the lower ends thereof providing a rear easel member with tongues at the upper edge thereof, the latter having slits extending forwardly from adjacent the rear corners thereof and having a plurality of laterally spaced forwardly facing U-shaped slits adjacent its rear end and a transverse score joining all the forward ends thereof providing a front easel member hingedly joined to the rear easel member, the erection of the easel resulting in an open space across the plane of the bottom said forwardly facing U-shaped slits providing supporting tongues disposed in the plane of the bottom and extending rearwardly over the open space resulting from the erection of the easel, the said tongues on the rear easel member being engaged with the bottom edges of the outer rear wall members when the easel is erected, and a cover hingedly joined to the upper edge of said inner rear wall member, said cover closure flap being disposed in forward parallel relation to said outer rear wall members when said cover is in said upright position and said easel is in erected position.

Can. 474,507 — Treatment of Wood. Mervin E. Martin and Daniel L. Sherk, Cumberland, Maryland, U.S.A., assignors to Camille Dreyfus, New York, New York, U.S.A. Filed July 26, 1948—Issued June 12, 1951.

Process for the preparation of purified wood pulp cellulose, which comprises digesting wood for 5 to 60 minutes at 150 to 160° C. with an aqueous solution of a lower aliphatic acid, recovering the digested wood and subjecting the same to at least one additional digestion for 5 to 60 minutes at 150 to 160° C. with an aqueous solution of a lower aliphatic acid of no greater concentration than that originally employed.

Process for the preparation of purified wood pulp cellulose, which comprises digesting wood for 5 to 60 minutes at 150 to 160°C. with 6 to 8 parts by weight on the weight of the wood of a 50 to 70% by weight aqueous solution of acetic acid containing 0.5 to 1.0% by weight on the wood of phosphoric acid, recovering the digested wood and subjecting the same to at least one additional digestion for 5 to 60 minutes at 150 to 160°C. with 6 to 8 parts by weight on the weight of the wood of a 30 to 40% by weight aqueous solution of acetic acid containing 0.5 to 1.0% by weight on the wood of phosphoric acid.

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FRANK M. FOLSOM
President, Radio Corporation of America

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PAPER TRADE JOURNAL

FINANCIAL

Scott Paper Co. has declared a quarterly dividend of 50 cents per share on the common stock payable September 12, to stockholders of record August 31. Directors also declared dividends of 85 cents per share on the $3.40 cumulative preferred stock and $1 per share on the $4 cumulative preferred stock, both preferred dividends payable November 1, to stockholders of record October 18.

Powell River Co., Ltd., and its subsidiaries comparative statement of consolidated profits six months ended June 30:*

	1951	1950
Consolidated profit before income taxes	$9,157,220	$6,963,960
Provision for income taxes	4,911,306	2,898,235
Net Profit	$4,245,914	$4,065,725
Earned per share	$3.16	$3.02
Paid per share	2.00	2.50

* The above figures are subject to audit and year-end adjustment and include operations of subsidies for five months only. A contingency reserve of $460,000 has been provided for in each of the above half-year periods.

PRODUCTION

Tons	1951	1950
Newsprint	149,153	146,727
Unbleached sulphite pulp	23,671	18,452
Other products	1,528	1,316

SALES

Tons	1951	1950
Newsprint	145,082	147,253
Unbleached sulphite pulp	23,372	19,693
Other products	1,448	1,184

Powell River Co., Ltd. shareholders have approved the three for one subdivision of the stock. The split will take effect on October 1, 1951, at which time the new certificates and share warrants will be available.

Minnesota and Ontario Paper Co. has issued the following financial and statistical data respecting consolidated operations (subject to audit). It is from the books of account as of June 30th:

	2nd Quarter 1951
Net Sales	$14,951,001
Net Income Before Taxes	3,185,933
Income Taxes	1,686,500
Net Income After Income Taxes	1,499,433
Net Earnings Per Share	1.17
Net Working Capital	15,836,255
Funded Debt at End of Quarter	1,947,000
Net Worth at End of Quarter	51,416,317
Book Value Per Share at End of Quarter	39.98
Number of Shares Outstanding (Excluding Shares Held in Treasury)	1,285,988
Production:	
Newsprint (Tons)	49,479
Other Paper Products (Tons)	23,177
Insulite Structural Insulation Board (Sq. Ft.)	113,636,000
Poles, Ties and Treating ($)	576,076
Sulphite and Kraft Pulp (Tons) (In excess of own requirements)	535

S. D. Warren Co. reports:

	Performance 1st 6 Mos. 1951	% Increase 1st 6 Mos. '51 over '50
Tons of product shipped	70,715	13%
Net dollar sales	$20,943,471	33%
Net profit before taxes	4,480,495	126%
Federal Taxes	2,784,000	272%
Net profit after taxes	1,696,495	37%
Earned per share of current common stock	$2.02	39%

Federal income taxes are figured in the foregoing on the over-all basis of 62 percent.

About 10 percent of production is now being absorbed by government and military agencies. Do not believe that this percentage will be altered substantially in the last six months of the year.

As a result of increased costs since the first of the year in pulp, wood, freight, wages, etc., selling prices were advanced approximately 3 percent the latter part of June, 1951. This advance was well within the provisions of CPR 22 of the Office of Price Stabilization.

The 1951 construction program—involving some four millions of dollars and from which substantial cost reductions are anticipated—is well under way. In spite of the tight building and equipment situations, believe that the various jobs will be completed as scheduled.

The company was "rolling" during the first six months of 1951, as the net profit before taxes figure indicates. Due to possible raw materials shortages (chiefly pulp) during the latter half of the year, the immediate future is somewhat more cloudy. However, it is estimated that in spite of the present extraordinary levels of corporate income taxes the year should wind up with about the same net profit after taxes that was earned in 1950.

S. D. Warren Co. has declared a dividend of 25 cents per share on the common stock, payable September 1 to stockholders of record at the close of business August 10. A dividend of $1.12 has been declared on the $4.50 cumulative preferred stock of the company, payable September 1 to stockholders of record August 10.

Marathon Corp. has declared a regular quarterly common dividend of 50 cents a share, payable August 31, to stockholders of record at the close of business August 10. The dividend on preferred stock is $1.25 a share, payable October 1, to stockholders of record September 20. Both dividends are net to stockholders, as the company assumes payment of the Wisconsin privilege dividend tax.

Even the Curb Exchange has a sense of humor these hot days. Bowman Gum, producer of Bubble Gum has been fully listed. On opening day free samples were passed out at its trading post.

Appropriately the Curb ticker symbol is BUBL.

Union Bag and Paper Corp. net sales, for the six months ended June 30, 1951, amounted to $53,446,095 compared with net sales of $35,695,372 in the first half of 1950, a 50 per cent increase. Net income for the first six months of 1951 amounted to $7,358,079 after provision of $13,175,000 for taxes, equal to $4.85 per share on 1,517,198 shares of capital stock. This compares with adjusted net income in the first half of 1950 of $4,549,208 after $3,575,000 for taxes, equal to $3.02 per share on 1,505,698 outstanding shares of capital stock.

Robert Gair Co., Inc., and subsidiary companies, 155 East 44th Street, New York 17, N. Y., report to stockholders:

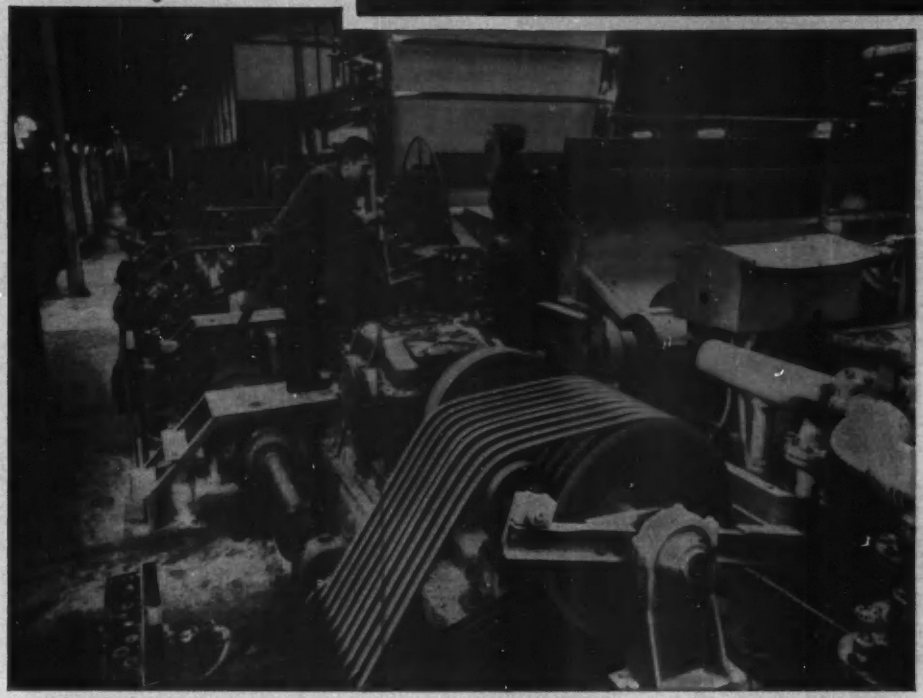
STATEMENT OF INCOME

	6 Months ended June 30, '51	6 Months ended June 30, '50
Net Sales to customers (U. S.)	$43,121,876	$24,657,106
Income before deductions shown below	$ 8,735,190	$ 2,877,540
Deduct:		
Depreciation of buildings and equipment	646,666	639,660
Dividends on preferred stock of subsidiaries consolidated	55,037	55,930
	$ 701,703	$ 695,590
Income from U. S. operations before estimated Federal taxes on income	$ 8,033,487	$ 2,181,950
Deduct:		
Provision for interest on 3½% Secured Sinking Fund Notes and 2½% Serial Notes, retired December 1950	—0—	159,328
	$ 8,033,487	$ 2,022,622
Deduct:		
Estimated Federal taxes on income	$ 5,057,000	$ 816,000
	$ 2,976,487	$ 1,206,622
Income of Gair Company Canada Limited and subsidiaries after estimated Federal and Provincial taxes on income and preferred dividends at applicable official rate of exchange	$ 683,104	$ 584,673
Company's equity of 60% in the consolidated net income of Southern Paperboard Corporation and subsidiary	704,612	627,157
Income for the period	$ 4,364,203	$ 2,418,452
Deduct—Preferred dividends for the period	179,288	179,288
Income applicable to common stock	$ 4,184,915	$ 2,239,164
Income per share on 1,771,888 shares of common stock outstanding	$2.35	$1.26

The above statement of income is subject to adjustment on audit at the end of the year.

Solving the Exacting Problems of 1951

Sandy Hill Selective Drive



More and more installations of Sandy Hill Selective Drives are drawing the enthusiastic praise of mill men looking for the perfect answer to an unvarying draw between sections.

Illustrated here is an installation in one of the largest midwestern mills producing fine paper. This and many other installations in all parts of the world are proving the efficient operation, economy and safety of these Drives year in and year out. Embodying the most modern ideas in power transmission, the Sandy Hill Selective Drive provides a fineness of draw regulation and exact draw maintenance, combined with simplicity, power saving and low first cost, to a degree hitherto unknown. These advantages result from the effective use of variable pitch V belt sheaves. It gives more than 3 times the draw range of the cone pulley and flat belt.

Compared with any other type drive it has a minimum of moving parts and parts subject to failure. Installation of the Selective Drive eliminates the need of a basement or steel superstructure for a line shaft. The line shaft is installed on the floor on low piers, not over eighteen inches high.

Sandy Hill's new brochure on Pulp and Paper Making Machinery is available on request.

Sandy Hill Iron & Brass Works

Hudson Falls, N. Y.

Machinists and Founders Specializing in Paper and Pulp Mill Machinery

Manufacturers of
Adjustable Cylinder Vats
Cylinder Paper Machines
Pulp Grinders
Dandy Roll Drives

Pulpers or Kneaders, Voith
Thickeners
Quick Opening Gate Valves
Bertrams Flow Distributors
Bertrams Shakes

Nelson Slice
Fairless Wet Machines
"Selective" and Corner Drives
Fourdrinier Paper Machines
"Packer" Screens

Castings
Bleaching Equipment
Seefeld Felt Conditioners
Cleveland Type Bearings
Shaker Screens

PRICES

The prices below reflect market quotations in New York at the mill level on standard grades. Does not include spot offerings.

PAPER AND BOARD

Standard News, Delivered Ports
Rolls, contract, per ton $105.00/116.00
Sheets ..... 118.00/ —

F.o.b. Mills. C.l. Frt. allowed, dock, N. Y.

Kraft— pr cwt., 40# base wgt.
Standard Wrapping Rolls ..... $7.75/ —
No. 1 Wrapping Rolls 8.25/ 8.50
Standard Bag ..... 7.50/ —

Tissues— per ream 24x36 (480) 10 lbs. 2500 lbs or more
Wh. No. 1 Frd. ..... $1.95 /$2.25
Wh. No. 1 MG ..... 2.10 / 2.40
Wh. No. 1½ ..... 1.85 / 2.15
Wh. No. 2 ..... 1.85 / 2.15
Kraft Anti-Tar 20x30 ..... 1.85 / 2.15
White Anti-Tar 20x30 ..... 1.95 / —

Toilet— per case of 100 rolls—1 M sheets
Unbleached 4½x4½ ..... $8.00/$8.25
Unbleached 4½x5 ..... 6.60/ —
Bleached 4½x4½ 10.00/12.50
Bleached 4½x5 ..... 9.85/ —
Per Case of 50 rolls—2000 sheets
Unbleached 4½x4½ ..... $8.00/$9.75
Bleached 4½x4½ ..... 6.95/ —
Per Case of 100 rolls—1000 sheets
Facial, 4½x5, 2-ply $8.95/10.65

Paper Towels—per case of 3750
Wh. Jr. M'tif'd 9½x9½ $5.75
Br. Sr. M'tif'd 9½x12 ..... 4.10
Br. Jr. M'tif'd 9½x9½ 3.60
Br. Jr. Sgl. fold 9½x10½ 3.65
Bkbd. 7½x11, 24/25 rolls $7.00/7.55

Manila, per cwt.
No. 1 Jute Tag, 100-lb., sheets* $19.55/21.55
Reg. Jute M.F. 40-lb., sheets* 18.00/20.00
Wrapping Manila 8.75/10.50
Printing Manila 10.50/12.00
* Less usual allowance for rolls.

Gummed Tape—per bdl., 500 bdls. or more
60-lb. 375 ft. GSI ..... $7.20 / —
60-lb. 600 ft. GSI ..... 7.20 / —
35-lb. 800 ft. GSI ..... 8.28 / —
35-lb. 500 ft. GSO ..... 6.21 / —

MARKET WOOD PULP

Third Quarter Contract Prices, Per Short Air-Dry Ton

	Varying freight allowances		On Dock Atlantic Ports		
	*U. S.	Canadian	*Swedish	*Finnish	*Norwegian
Groundwood	$92.50/ —	‡$95.00/100.00			
Sulfate, Bleached	145.00/ —	190.00/200.00	$230.00/ —	$230.00/ —	$230.00/ —
Semi-bleached Sulfate	140.00/ —				
Sulfate, Unbl.	132.50/ —	145.00/175.00	200.00/ —	200.00/ —	
Sulfite, Bkbd.	140.00/ —	160.00/175.00	225.00/ —	225.00/ —	225.00/ —
Sulfite, Unbkbd.	132.50/ —	150.00/160.00	200.00/ —	200.00/ —	
Sulfite, Unbl'd (Glassine)		164.00/ —			
Soda, Bkbd.	140.00/ —	155.00/160.00			
Sulfite Screenings	72.50/ —				
Sulfate Screenings	67.50/ —				
Groundwod Screenings	60.00/ —				
Unbkbd Sulfate Sideruns	132.50/ —				
Stand. News. Sideruns	92.50/ —	106.00 —			

* OPS Ceiling, CPR 49 ‡ F.o.b. Shipping Point.

Boards, per ton—
Filled News ..... $107.50/ —
Plain Chip 105.00/107.50
Bkbd. Mls. L-d. Chip ..... 147.50/ —
White Pat. coated .020 ..... 170.00/ —
Kraft Linera 42 lb. 115.00/117.50
Kraft Corr. .009 ..... 122.50/126.00
Binders Boards 137.50/140.00

The following prices are representative distributors' resale prices.

Rag Content Bonds and Ledgers—
White, 20 lb.

Bonds	4 Ctns.
	per cwt.
100% Rag Ex. No. 1	$70.45/$75.90
100% Rag	62.65/ —
75% Rag	48.15/ —
50% Rag	38.90/ —
25% Rag	31.65/ 33.00

Ledgers	4 Ctns.
	per cwt.
100% Rag Ex. No. 1	$72.65/$72.80
100% Rag	63.90/ —
75% Rag	49.40/ —
50% Rag	40.20/ —
25% Rag	33.00/ 34.30

Sulphite Bonds and Ledgers
White, 20 lb.

Bonds	4 Ctns.
	per cwt.
Watermarked	$19.00/$20.30
Plain	18.05/ 19.50

Ledgers	4 Ctns.
	per cwt.
Watermarked	$20.30/$21.80
Plain	19.35/ 20.80

White Back

Conversion Coated	Case
	per cwt.
No. 1	$23.40/$24.60
No. 2	21.90/ 23.40
No. 3	20.40/ 22.40

Machine Coated

No. 1	$18.15/$18.40
No. 2	16.15/ 16.65

Uncoated

No. 1 Antique (Watermarked)	‡ $18.65/$19.85
Offset	17.40/ 18.65
A Grade E. F.	‡ 17.40/ 18.65
A Grade S. C.	‡ 18.15/ 19.40
B Grade E. F.	‡ 17.65/ 18.40
B Grade S. C.	‡ 16.90/ 19.15

‡ Indicates a price change.

WASTE PAPER MARKET

The following quotations were gathered from major dealers in each market. They are an indication of the price range in which volume tonnage was moving on the date specified. Prices to mills, per ton, f.o.b. cars shipping point (includes brokers' fee.)

	New York	Philadelphia	Boston	Chicago
	July 27	July 26	July 27	July 27
No. 1 Mixed Paper	$19.00/ 24.00	$21.00/ 22.00	$19.00/ —	$20.00/ —
Bushcard Cuts	20.00/ 25.00	21.00/ 24.00	23.00/ —	25.00/ —
Mill Wrappers	20.00/ 30.00	25.00/ 30.00	20.00/ —	22.00/ —
No. 1 News	23.00/ 25.00	22.00/ —	— /22.00	20.00/ —
Over-issue News	28.00/ 35.00	30.00/ 35.00	22.00/ 24.00	25.00/ —
Corrugated Containers	55.00/57.00	58.00/ 63.00	46.50/ 48.00	52.00/ —
New Corrugated Cuts	Nominal	60.00/ 65.00	55.00/ 65.00	62.00/ —
Double Kraft Ld. Corr. Cuts .. *	115.00/120.00	105.00/120.00	110.00/120.00	120.00/ —
100% Kraft Corr. Cuts ..... *	140.00/165.00	125.00/135.00	130.00/ 150.00	140.00/ —
Used Kraft Bags ..... *	85.00/105.00	80.00/ 85.00	85.00/116.50	65.00/ —
No. 1 Brown Kraft Paper	70.00/ 75.00	90.00/ 95.00	90.00/110.00	65.00/ —
Super Resorted Br. Kraft .... *	100.00/105.00	100.00/105.00	100.00/125.00	90.00/ —
New Br. Kraft Env. Cuts .... *	160.00/180.00	160.00/175.00	160.00/180.00	150.00/ —
New Br. Kraft Cuts ..... *	150.00/175.00	130.00/140.00	150.00/180.00	140.00/ —
No. 1 Gdwd Shvs.	65.00/ 70.00	50.00/ 65.00	75.00/ 85.00	55.00/ —
White Newshlanks	100.00/110.00	80.00/ 90.00	90.00/100.00	80.00/ —
No. 1 Flyleaf Shvs. ..... *	80.00/120.00	80.00/ 85.00	95.00/110.00	100.00/ —
No. 1 Soft Wht. Shvs. ..... *	160.00/190.00	170.00/175.00	175.00/195.00	175.00/ —
Super Soft Wht. Shvs. ..... *	190.00/200.00	190.00/200.00	190.00/210.00	185.00/ —
Hd. Wht. Shvs. ..... *	185.00/210.00	190.00/215.00	190.00/215.00	180.00/ —
Hd. Wht. Env. Cuts ..... *	200.00/245.00	200.00/225.00	200.00/235.00	190.00/ —
New Manila Env. Cuts ..... *	140.00/150.00	160.00/165.00	140.00/165.00	115.00/ —
Col. Tab Cards ..... *	110.00/120.00	115.00/120.00	95.00/150.00	100.00/ —
Manila Tab Cards ..... *	170.00/185.00	165.00/190.00	160.00/200.00	165.00/ —
No. 1 Mixed Ledger ..... *	95.00/105.00	100.00/105.00	87.00/110.00	100.00/ —
White Ledger ..... *	130.00/140.00	125.00/130.00	125.00/140.00	125.00/ —
No. 1 Book & Mag.†	41.00/ 45.00	35.00/ 45.00	40.00/ 60.00	25.00/ —
No. 1 Rep'd. Hvy. Books‡	50.00/ 55.00	50.00/ 65.00	60.00/ 75.00	50.00/ —

* GCPR Ceiling. † Includes Time & Life; no coarse groundwood. ‡ Not to exceed 15% groundwood.

RAG MARKET

New Domestic Cotton Cuttings
OPS Ceiling Price, CPR 28
Delivered Mill Basis

Add 7½% Dealer Commission

No. 1 White Shirts	$21.00
No. 1 Unbkbd. Muslins	21.00
Bkbd. & Unbkbd. Underwears	21.00
Bkbd. Canton Flannels	21.00
No. 1 Light Silesias	16.00
No. 1 Light Prints	11.50
No. 1 Blue Overalls	14.50
Suntan Khakis	11.50

Add 10% Dealer Commission

Fancy Shirts	$10.00
Indigo Blues	10.00
Mixed Khakis	8.00
Corduroys	8.00
Cottonades	8.00
No. 1 Washables	6.50

Old Domestic Cotton Rags
(Prices to Dealers, f.o.b. Ship. Pt.)

	Per 100 lbs.
Mixed White	$5.00/$5.50
Cotton Pants & Overalls	4.25/ 5.00
Thirds and Blues, Repacked	3.75/ 4.00
No. 1 Roofing Rags	2.00/ 2.10
No. 2 Roofing Rags	1.80/ 1.90
No. 3 & 4 Roofing Rags	1.70/ 1.80

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(Prices to Dealers, f.o.b. N. Y.)

	Per 100 lbs.
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Domestic Gunny, No. 1	5.50/ 6.00
Heavy Wool Tares	8.00/ 8.25
Foreign Manila Rope	8.50/ 8.75
Domestic Manila Rope	9.00/ 9.25
Jute Strings	6.00/ 6.50
No. 1 Sisal Strings	8.00/ 8.25
Paper Mill Tares	5.25/ 5.75
Foreign Scrap Burlap	5.00/ 5.25
Domestic Scrap Burlap	6.50/ 7.00
Austr. Wool Pouches	7.50/ 8.50
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- Chlorine
- Muriatic Acid
- Sodium Sulfide
- Sodium Sulfhydrate

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Alcohol, methyl:
Synthetic, Zone 1, dns.
c.l. tk. afld. ..... gal. .44
Casein, acid-prec.:
dom. sh. pt. c.l. ..... lb. .39 / .41½
imp. ex. dock ..... lb. .29½/ .40
Caustic soda:
c.l. wks. solid, 76%, cwt. 3.35
flak. & grd. 100-lb. drums ... 3.75
liquid 50% tanks 2.55
liquid 76% tanks 2.65
China clay:
dom. air-float. filler, c.l. wks. ton 10.00
water-washed, stamp, filler ... 11.00
coating ..... 17.60 /30.50
imported, ex whse. ... short ton 15.20 /28.35
Chlorine:
single-unit tanks, works .. cwt. 2.70
multi-unit ..... cwt. 3.25 / 4.40
Formaldehyde:
USP, inh. dns, c.l. wks. .... lb. .0625/ .0675
l.c.l., E. wks. ..... .0675/ .0725
Fuel oil:
Bunker C, No. 6 Cal. bvy
tanks, refinery ..... bbl. 1.95 / 2.15
light ..... bbl. 2.00 / 2.25
Hydrogen peroxide:
USP, 33% cbys. E. of Miss.
Lime: lb. .23½/ .26½
hydrated, bags, wks. ..... ton 13.50
Rosin:
B gum, drms, c.l. Savan. .. cwt. 7.00 / 9.08*
G, H ..... cwt. 8.30 / 9.40*
I, K ..... cwt. 8.40 / 9.40*
FF, wood, do. ..... cwt. 6.50 / 7.00
* OPS Ceiling, CPR 52.
Rosin size:
70%, gum & pale grds, tank cars, south, sh. pt. .... cwt. 6.47 / 6.65
Salt cake:
dom. bulk, c.l. wks. ..... ton 17.00
wks. frt. all ..... ton 20.00 /22.00
Soda ash:
light, 58%, bags, wks. 1.50
bulk ..... cwt. 1.20
Sodium silicate 40°:
tarbld. c.l. wks. ..... cwt. 1.30 /
l.c.l. wks. ..... 1.60 / 1.85
Sodium peroxide:
dns. c.l. E. of Miss. ..... lb. .21
l.c.l. do. ..... lb. .21½/ .22
Soybean, protein:
chem. ind, wks. c.l. ..... lb. .24 / —
Cinn. and Chic.
Sulfuric acid:
60° Be. cbys. c.l. wks. .... cwt. 1.75 / —
l.c.l. wks. ..... cwt. 2.05 / 2.85
Sulfur:
crude, c.l. mines, contract, long ton 21.00 /22.00
f.o.b vessels Gulf ..... 22.50 /23.50
Sulfur dioxide:
liquid, comml. cyl. wks. ..... lb. .09
multi-unit cars ..... lb. .0535
Starches:
pearl corn, bags, c.l. wks. .. cwt. 6.02 / —
white dextrines, c.l. wks. .. cwt. 7.41 / —
potato, Idaho, c.l. wks. .... cwt. 5.50 / —
potato, Maine, c.l. wks. .... cwt. 5.75 / —
tapioca, conv. dextrines ... cwt. 7.75 / 8.50
low, Siam, ex dock N. Y. ..... 5.75 / 6.00
Talc: nominal
domestic, 50-lb. sacks, c.l. wks. ..... ton 25.00 /30.00
Titanium dioxide:
anastase, c.l. deld., bags .... lb. .21 / .21½
l.c.l. deld. ..... lb. .22 / .22½
rutile, c.l. deld. ..... lb. .23 / .23½
l.c.l. deld. ..... lb. .24 / .24½

NEW LITERATURE

Abbeon Supply Co., 179-15 Jamaica Ave., Jamaica, N. Y. Booklet, "A Few Facts About Dehumidification For Industry." Some subjects covered are: What is meant by Relative Humidity and how it is computed; What are the signs and results of too much humidity; How to remove moisture from the air; Some recommended humidities (tables of recommended humidities in various industries). Copy obtainable gratis.

Babcock & Wilcox Tube Co., Beaver Falls, Pa. Bulletin, "Technical Data Card 149 Alloy Steel Tubing." Presents condensed data on microstructure, critical points, effect of alloy elements, forging, machining, welding and thermal treatment for 14 well known alloy steels used in the production of tubular parts. Copies available free.

Caterpillar, Peoria, Ill. Flier, "New Diesel Power from Caterpillar." Technical copy with illustrations.

Celanese Corp. of America, 180 Madison Ave., New York 16, N. Y. Booklet, "Celanese Plastics." Describes how safety devices help cut annual toll of work accidents. Features shatterproof celanese acetate used in many new protectors.

Chain Belt Co., 1600 W. Bruce St., Milwaukee 4, Wis. Bulletin, "Installation, Operation and Maintenance of Chain Drives and Conveyors." Illustrations showing graphically the correct and incorrect ways of solving chain installation, operation and maintenance problems.

Chamber of Commerce of the U. S., Washington, D. C. Booklet, "Sabotage and Plant Protection." Necessary steps to be taken by industry and defense officials for combatting sabotage as set forth by civilian and military experts.

Chiksan Co., Brea, Calif. Catalog, "Ball-Bearing Swivel Joints." Also, gives the application of fabricated products for the petroleum industry. No. 50-D. 20-pp: 4-p bulletin, covering dimensions of swivel joints; 4-p bulletin on packing sets for all swivel joints.

Electric Machinery Mfg. Co., Minneapolis 13, Minn. Book, "Precision Speed Control with the Adjustable-Speed Magnetic Drive." Technical copy. Clarified through use of charts, diagrams, and illustrations. 32-pp.

Filtration Engineers, Inc., 155 Oraton St., Newark 4, N. J. Folder, "FEON Synthetic Filter Fabrics." Features Selector Chart showing which materials are best for a list of typical corrosive chemicals and solvents. Also, case history and cost data on actual installations using these fabrics.

Heat Exchange Institute, 122 E. 42nd St., New York 17, N. Y. Book, "Heat Exchange Institute Standards for Barometric and Low Level Jet Condensers." Covers such phases as nomenclature, definitions and standards for condenser performance, informa-

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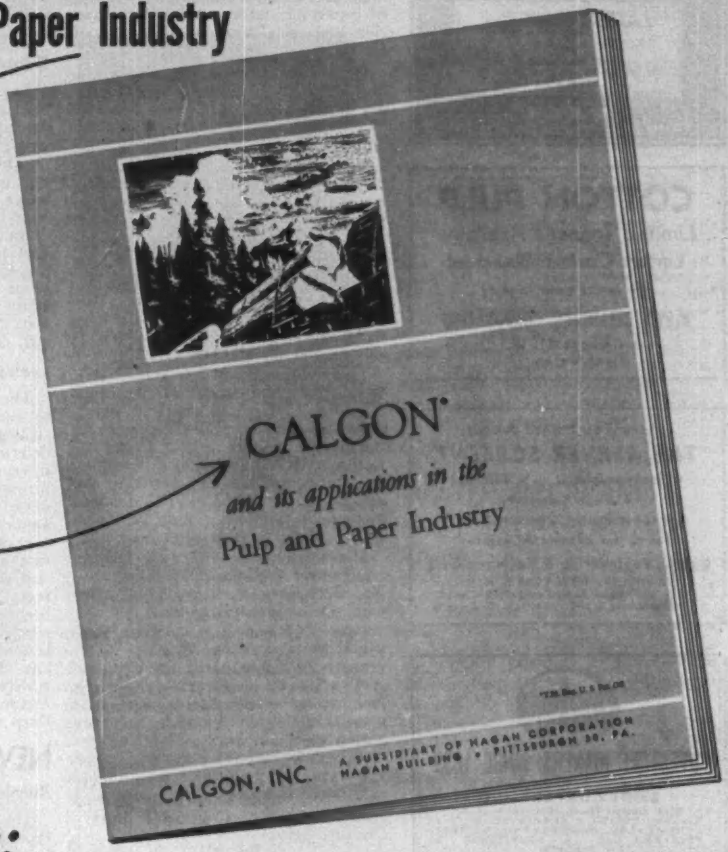

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tion required in the calculation of water requirements, vacuum pump capacity, installation, and information on atmospheric relief valves and a series of conversion tables, useful in calculation and installation of this type of jet condenser. $1 per copy.

Heinemann Electric Co., Trenton 2, N. J. Bulletin, "Transformer Secondary Sectionalizing Breaker." Features "Type 400" Control Unit. No. 2015.

Industrol Corp., 472 Westfield Ave., East, Roselle Park, N. J. Bulletin, "Dynamic Dehumidifiers for Instrument Air." Diagrams, tables, data, and prices.

Ingersoll-Rand Co., Phillipsburg, N. J. Catalog, "Vertical Turbine-Type Pumps." Form 7228.

Lewis-Shepard Products, Inc., Watertown, Mass. Circular 30-210, Features Working Height Lifter. Specifications and illustrations given.

Louis Allis Co., Milwaukee 7, Wis. Book, "50th Anniversary of The Louis Allis Co." Traces 50 years of steady growth in the electrical industry. From the first DC motors in 1904, to the AC motor in 1908, to the first gearmotors, headstock-, ball bearing-, vertical-, and up to 1951's full line of standard motors. A fascinating story of industry evolution, lavishly illustrated.

Metron Instrument Co., 432 Lincoln St., Denver 9, Colo. Data Sheet No. -4c. Describes variable speed drive with push rod ratio control.

Paper Cup and Container Inst., Inc., 551 Fifth Ave., New York 17, N. Y. Booklet, "Feeding the Factory Worker." A survey by the Field Research Div. on the feeding arrangements of a cross-section of American industry during the latter part of 1950.

Phillips Rotary Joint and Valve Co., Inc., 5711-13 Boulevard East, West New York, N.J. Bulletin, "Phillips Packless Leakproof Flexible Rotary Pressure Joint."

NEW SUPPLIES

New Domestic Wax

Development of a domestic wax that successfully replaces imported Carnauba at a fraction of the cost is announced. Melting point of the new wax, Concord No. 47, is said to be 86°C., about five degrees higher than that of imported No. 3 N. C. Refined Carnauba. Resultant emulsions are reported to be translucent, light in color, highly stable. They have a good gloss and good durability, it is said, and may be used for almost any purpose for which a Carnauba or Candelilla emulsion is suitable, including paper sizings and coatings, protective coatings, etc. Write to Concord Chemical Co., Moorestown, N. J.

Syton C-30

Syton C-30 is a colloidal solution of hydrated silica in water for emulsion type waxes, water-based finishes, latex and other products.

One industry application is the modification of paper and other film-like materials to improve wettability, absorption and other surface characteristics. Write to Merrimac Div., Monsanto Chemical Co., Everett, Mass.

Shipping Case Glue

Boxeal Shipping Case Glue provides permanent, non-crystallizing bonding of box flaps that reinforce the rated strength of corrugated shipping cases, the manufacturer states. By use of this new dextrinized starch adhesive, boxes can be sealed by machine and hand-brushing in 20 to 45 seconds, it is said. Operates on all varieties of container boards, all shapes of boxes, top flaps, bottom flaps, slide or telescope sleeves. Manufactured by Paisley Products, Inc. Div., Morningstar, Nicol, Inc., 1770 Canalport Avenue, Chicago 16, Ill.

Lectro-Clad Pipes

The Lectro-Clad Process is designed to cut corrosion costs and conserves strategic metals. It deposits a predetermined thickness of nickel on the interior and/or exterior of pipe and fittings from 1½" to 20" I.P.S. Only 0.006" nickel is necessary to protect against most corrosive action; however in extreme cases up to 0.015" or more can be applied. The bond is such that the nickel actually becomes an integral part of the steel. The lining has been proven to be pore-free and can withstand severe tests such as heating, bending, welding and reducing without any effect to the bond or corrosive resistance of the nickel, the manufacturer claims. Bart Manufacturing Corp., Belleville, N. J.

NEW EQUIPMENT

Running-Time Recorders

The new Running-Time Recorders record on a chart the operating or "on" time of production machinery, and give the total "on" time in hours, minutes, and seconds for a given period. "Time off" periods also are shown on the chart as well as the time at which they occurred. Readings are magnified in such a way that the total operating time of a machine can be easily and accurately determined to within a few seconds, it is said. Available from Bristol Co., Waterbury 20, Conn.

Shaftless Backstand

The Shaftless Backstand represents an entirely new concept in mill roll unwinding. Several new features combine to reduce the downtime on mill roll changing to a minimum. The No. 55 Backstand includes automatic tension and side-register control, the latter being optional and not standard equipment. There is a motor for raising and lowering mill roll arms, and one for moving the arms to accommodate different width rolls. Entire working mechanism is enclosed, for lower maintenance costs and greater operat-

ing safety. The backstand may be purchased with or without slitting and rewinding equipment. It is usable with any type of rewinding machine as well as with waxing and laminating equipment, printing presses, etc.

Rotary Roof Cooler

The Rotary Roof Cooler consists of a few parts that need no readjustment and require no thermostatic controls or electrical connections. A jet of water shoots from the nozzle at the best ballistic angle over the space to be cooled. As its edge hits the tops of the vanes of the water wheel, this is set in rapid motion and divides the jet of water into drops which fall on a very narrow sector of the roof.

The spinning wheel also rotates the cooler on its support through gears, causing the spray to cover the entire surface gradually. The result is a thin film of water being permanently renewed on the roof. As the water evaporates, heat is actually pulled from the structure, the manufacturer states. How much roof area is covered by one unit depends on the available water pressure. Write to Ruppright's Rotary Roof Cooler, P. O. Box 6795, Los Angeles 22, Calif.

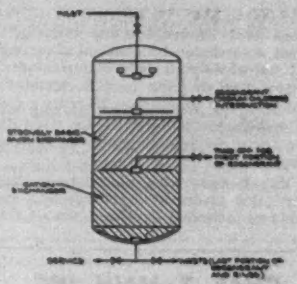
Gasoline Chain Saw

A new 27-pound, 4-hp., gasoline chain saw is announced as lighter and more powerful Features fast cutting

speed, the result of two unique features, a narrow-kerf chain which does less waste cutting and thus requires less power to drive; plus an efficient belt drive which eliminates drive gears that eat up engine power. Perfect balance, with the weight close to the operator's body, plus simple pivot action makes this saw easy to handle on all cuts, whether felling, bucking, undercutting or notching, it is claimed. The one simple control is a throttle button on the handle. Automatic centrifugal clutch stops chain when engine idles, and prevents overload when chain binds in cut. Concentric-bowl carburetor permits operation at extreme angles. By a push of button saw is rotated from vertical to horizontal cutting positions. The carburetor swivels with the control handle; there are no screws to loosen; not nuts to tighten. Rain and dust proof ignition, plus large protected air cleaner makes the engine easy to start in the coldest, wettest weather. A wide range of blade sizes are offered by Homelite Corp., Port Chester, N. Y.

Dual Bed Ion Exchanger

The new Ion Exchanger is designed to provide simple, inexpensive water softening and to lower or remove alkaline content. Its water yield is described as "safe" because the unit cannot produce an acid water during the treating step or acid waste waters



during regeneration. It employs new type resins that are regenerated with plain salt. In addition to softening water, the new resins remove alkalinity and sulfates. To be known as the "Dual Bed" Ion Exchanger, the new unit eliminates the need for much elaborate equipment and for handling such dangerous chemicals as caustic soda, sulphuric and hydrochloric acids during the regeneration process. Manufactured by Permutit Company, 330 West 42nd St., New York, N. Y.

WATER PROBLEMS

EXTEND POLLUTION RESEARCH

GREEN BAY, Wis. — Wisconsin sulphite mills will keep up their research to cut stream pollution and will spend even more money on this scientific program than before, it was announced by J. M. Conway, who is president of Hoberg Paper Mills as well as of the Sulphite Pulp Manufacturers' Research League.

Twelve paper companies that operate 14 sulphite pulp mills with 90 percent of Wisconsin's total output and a large share of Michigan's have just ratified a new five-year contract. Under this arrangement the work of the Research League which started its scientific operations in 1939 and has been supported under previous contracts by the same member mills, is guaranteed through 1956.

Besides binding themselves to support the League for another term, the members boosted the League budget by almost 23 percent from last year's

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$118,000 to $145,000 for this year. Previous cost of membership was 27½ cents contributed by each member mill per ton of sulphite pulp manufactured. Retroactive to June 1, 1951, members are assessing themselves 33 cents a ton to search for non-pollutional ways to use spent sulphite liquor or otherwise dispose of it.

The League maintains laboratories and pilot plants at Appleton and supervises technical developments of the Lake States Yeast Corp. torula process treatment plant at Rhinelander. It also supports research projects at the Institute of Paper Chemistry, Appleton, and at a number of major universities. Its staff is headed by Averill J. Wiley, Technical Director of Appleton.

Folke Becker, president of Rhinelander Paper Co., is vice-president of the League, and Cola G. Parker, president of Kimberly-Clark Corp., Neenah, is treasurer. Besides Hoberg, Rhinelander, and Kimberly-Clark, the companies comprising the League are: Badger Paper Mills, Peshtigo; Consolidated Water Power & Paper Co., Appleton and Wisconsin Rapids; Detroit Sulphite Pulp and Paper Co., Detroit, Mich.; Falls Paper and Power Co., Oconto Falls; Flambeau Paper Division of The Kansas City Star Co., Park Falls; Marathon Corp., Rothschild; Marinette Paper Co., Marinette; Nekoosa-Edwards Paper Co., Port Edwards; and Northern Paper Mills, Green Bay.

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OBJECT TO DAM

HOLYOKE, Mass. — The plan of the Windsor Locks Canal Co. to build a dam at Windsor Locks, Conn., will run into determined opposition from Holyoke industrial sources.

The Connecticut privately owned public utility would like to raise the present dam at Windsor Locks six feet. That would cause a pond backup along the Connecticut river as far as Holyoke, and would reduce that much of the power head of the Holyoke mills along the third level canal. They are the Chemical Paper Mfg. Co., the Newton Paper Co. and the Franklin Paper Co. The Holyoke Water Power Co. would also be adversely affected inasmuch as its water power system is linked up with these three concerns. Elmer C. Tucker, vice-president of Chemical, said that it is possible that the many mills along the second level canal would suffer a reduction in power potential as a result of the creation of this pond.

For years the public power interests have advocated the raising of the dam at Windsor Locks to generate more hydro-electric power. Army engineers have surveyed the prospect and recommended it. This latest development is extraordinary because it brings the entry of a private power company into the picture. And the Windsor Locks Canal Co. proposes to do a bigger dam building job than the Army engineers suggested.

Mr. Tucker said that should this Windsor Locks dam be built as planned, it would be a severe blow to Holyoke mills along the river bank. Not only would it reduce their present average head of 22 feet by six feet, but it will make a larger proportionate cut in the efficiency of their water wheels.

Any opposition to the Windsor Locks project must be filed with the Federal Power Commission by August 13. The local concerns will organize their case against this undertaking in the meantime.

The proposed installation would contain a powerhouse with four turbines having a total dated capacity of 56,333 horsepower. It would set a 45-foot reservoir peak at Windsor Locks with the pond extending up river to Holyoke.

CUSTOMS COURT CASES

The United States Customs Court in an exhaustive decision has supported the position of the Import Committee that paper containing over 6½ percent ash is not duty free as standard newsprint, but dutiable as other printing paper. The case involved some thirty separate shipments of paper with ash content ranging from 7½ to 15 percent according to Warren B. Bullock, manager of the Import Committee of the American Paper Industry. The importer had appealed to the Court to reverse the action of the Customs officials who had levied duty at the rate for printing paper. When the case was tried over a year ago the Import Committee assisted the Government by securing four outstanding industry representatives who had sold standard newsprint for over twenty years. All four testified that the paper in question was not of the type usually used for the publication of newspapers.

New cases in the United States Customs Court include one involving wrapping paper, consisting of 90 percent kraft pulp and 10 percent screenings or partially digested wood, classified for duty at 25 percent as wrapping paper not specially provided for, but claimed to be properly dutiable at 20 percent as kraft wrapping paper. The shipments were through Newport, Vt., before the duty rates on wrapping papers were reduced by Reciprocal Trade Agreements at Annecy. In another case asphalt treated, partially corrugated material, imported at Pittsburgh, classified for duty as a manufacture of paper, is claimed by the importer to be dutiable at the lower rate for test container board.

Green striped kraft paper from Canada claimed to be dutiable as kraft wrapping paper at 20 percent, has been held by Detroit officials to be dutiable as wrapping paper with a surface design at 4½ cents per pound plus 10 percent. Shoe board imported in Vermont held by Customs officials to have been undervalued. Corrugated material, asphalt treated, claimed to be dutiable as test container board at 10 percent, has been held by New York officials to be a manufacture of paper at 17½ percent.

NOW CORNELL PAPERBOARD

The corporate name of Cornell Wood Products Co. became Cornell Paperboard Products Co. as of August 1. The change in name entails no change in personnel or ownership.

SUPPLIERS

MICHIGAN PIPE CO. has appointed Emanuel H. Bronstein as consulting corrosion engineer for research and sales coordination. Mr. Bronstein will be available for consultation in corrosion problems and will coordinate the sales of "MPC" custom-built corrosion-resistant products furnished to the chemical process industries; to the pulp, paper and textile mills; and to waste disposal, irrigation and water works systems. He will also coordinate the company's long range program on product improvements, new product development and market surveys.

MONSANTO CHEMICAL CO., St. Louis, Mo., has appointed John J. Healy, Jr., assistant to Dr. Carroll A. Hochwalt, vice-president in charge of research, development and patent activities.

Mr. Healy has been assistant general manager of Monsanto's Merrimac Division at Everett, Mass. Mr. Healy joined the Merrimac Chemical Co. in 1921 as a control chemist. He became a research chemist in 1922. In 1929, Monsanto acquired the Merrimac company and a year later Mr. Healy became an assistant in technical service for Monsanto's Merrimac Division. He became director of development for the division in 1935 and assistant general manager in 1947.

GOODYEAR TIRE & RUBBER CO. has transferred Kenneth J. Whisler, field representative of the Films and Flooring Division, from Philadelphia to Dallas, Texas. At Dallas he will handle Goodyear accounts in Pliofilm, a packaging material for foods and other items, rubber and vinyl flooring and Goodyear Vinylfilm.

A. E. STALEY MANUFACTURING CO., corn and soybean processor, has appointed William G. Dahlquist, to work out of the Staley Chicago office. George H. Kishman has joined Staley's Cleveland office and will work in the Ohio and Michigan territory.

DIAMOND ALKALI CO. is planning for an expansion project at its silicate of soda plant at Dallas, Tex.

The new project, estimated to cost several hundred thousand dollars, calls for the installation of a large furnace to supplement the production of three smaller-type furnaces now in operation. The present furnace building will be remodeled to accommodate the expanded facilities.

JAMES MAIR, vice president of the Goslin-Birmingham Manufacturing Co., Inc., Birmingham, Alabama, was awarded the professional degree of Chemical Engineer by the University of Alabama.

Mr. Mair was awarded the degree in recognition of outstanding contributions in the field of evaporator design. His thesis was written on the subject of "The Falling Film Evaporator", and copies are on file at the University Library.

REEVES PULLEY CO., Columbus, Indiana, manufacturers of variable speed control equipment, expanded their facilities on the West Coast by the establishment of an assembly plant, together with sales and engineering offices, in San Francisco, and the opening of a sales and engineering office in Los Angeles. R. G. Sullivan will be in charge of West Coast operations.

HERCULES POWDER CO.'s Paper Makers Chemical Department has adopted two new names for two established products. A fortified rosin size, formerly known as Dresinate 209, is now identified as Pexol. A companion product, a size additive in dry form, has had its name changed from Dresinate 211 to Size-Aid. Both Pexol and Size-Aid are readily available. Pexol is available in dry form or as a paste. Size-Aid is a dry, concentrated size additive formulated to increase the efficiency of rosin size.

NATIONAL INCREASES WAGES

CARTHAGE, N. Y. — A general wage increase of two and one half cents an hour has been granted employes of National Paper Products Co. division of Crown Zellerbach Corp., following negotiations between the company and the two unions representing the employes.

HEBERT PAPER MOVES

BUFFALO, N. Y.—The Hebert Paper Corp. has moved into a new building, containing 20,000 square feet of space on a 14-acre tract, at 670 Young street, Tonawanda. Additional equipment has been installed.

The new plant provides about twive as much manufacturing space as used by the company in its previous location at 1721 Elmwood avenue. The company is a wholly-owned subsidiary of Hubbs & Howe Co.

OBITUARIES

Charles Whitney Morden, 63, president of Morden Machines Co., Portland, Ore., died unexpectedly of a heart condition on July 23 at his residence in Portland.

Mr. Morden attended the Worcester, Mass., Polytechnic Institute, graduating in 1910. After his graduation he was associated with the Crown Williamette Paper Co., starting what was to be his lifetime work in the paper industry. He was with Crown for 17 years at their Camas, Wash., and West Linn, Ore., mills, his last position being

CANADIAN NEWSPRINT SUPPLY CO.
370 Lexington Avenue, New York 17, N. Y.
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We are soliciting offerings of NEWSPRINT in rolls and sheets; GROUNDWOOD PRINTING PAPERS and specialties; SULPHATE BOND PAPER and specialties; KRAFT WRAPPING PAPER for export.

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Reg. U. S. Pat. Off.
High Speed Disc Refiner
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for the manufacture of cellophane, rayon and paper products
RESTIGOUCHE COMPANY, LIMITED
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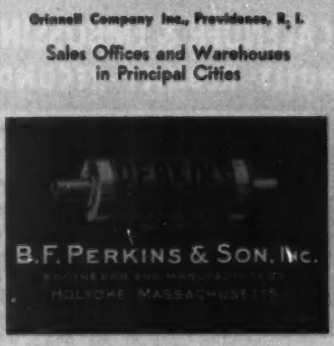
WHENEVER PIPING IS INVOLVED
Grinnell Company Inc., Providence, R. I.
Sales Offices and Warehouses in Principal Cities



Charles W. Morden

assistant manager in their Portland office.

After leaving Crown in 1927, he began the development of stock preparation equipment for pulp and paper mills. In 1931 he founded the Morden Machines Co. for carrying on the development of the Morden "Stock-Maker" and later, the Morden "Slush-Maker."

Charles Sumner Booth, 77, former purchasing agent for the Dexter Sulphite, Pulp & Paper Co., died July 17 at Norwich, N. Y. He joined the paper firm in Dexter, N. Y., in 1940, as purchasing agent and safety supervisor, retiring from the firm in 1949.

AMERICAN PAPER AND PULP ASSOCIATION'S PAPER PRODUCTION RATIO REPORT

(Production as per cent of normal capacity)

COMPARATIVE WEEKLY SUMMARIES

	June 23	July 30	July 7	July 14	July 21*
1951	99.4	95.7	62.6	94.6r	100.2
	June 24	July 1	July 8	July 15	July 22
1950	99.5	97.7	51.8	92.9	96.6

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1950	92.6	95.6	96.7	95.4	96.4	97.7	85.3	99.6	96.1	101.0	99.6	91.2	95.8
1951	99.3	101.3	102.3‡	103.1‡	102.5‡	100.2‡							

‡ Preliminary.
r Revised.
* Weekly capacity base increased by 3,689 tons.

COMPARATIVE YEARLY SUMMARIES

	1944	1945	1946	1947	1948	1949	1950	1951
Year to Date	87.4	87.9	99.3	103.6	97.9	85.5	94.2	99.9
Year Average	88.1	89.4	101.1	104.3	96.2	88.6	95.8	

PAPERBOARD OPERATING RATIOS†

	June 23	June 30	July 7	July 14	July 21
1951	103	103	62	83	94
	June 24	July 1	July 8	July 15	July 22
1950	94	94	55	82	95

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Ave.
1950	88	92	91	92	91	94	82	100	96	102	101	95	94
1951	102	105	104	105	104	103							

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

Note: The chart shows the ratio through December 1950 on the basis of 6-day capacity. Beginning with January 1950 the ratio is shown on the new basis of normal 6 and 7-day capacities by the colored line.

† Paperboard operating ratios continue on the basis of a 6-day week.

† Per cents of operation based on "inch-hours" reported to the National Paperboard Association.

BUY

U. S. SAVING BONDS

CALENDER & EMBOSSING ROLLS
BUILT–REBUILT–RECONDITIONED

Building the finest calender and embossing rolls to your specifications is a Wheeler specialty—backed by 20 years experience. Calender and embossing rolls up to 240 inches built or reconditioned. Complete technical department at your service.

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RAILWAY PAPER-RATING TESTS SAY NO!

Only Certain Bales of COTTON LINTERS are Suitable for "Cotton Content Paper"

Our Graders and Technicians, thru Tests and Controls insure that

PAPER-RATED COTTON LINTERS

will meet your requirements; give you Cleanliness and Quality of Raw Stock, Economy and Efficiency in production.

THE RAILWAY SUPPLY & MFG. CO.
General Office: CINCINNATI, OHIO
PAPER MILL AND PLASTICS DIVISION

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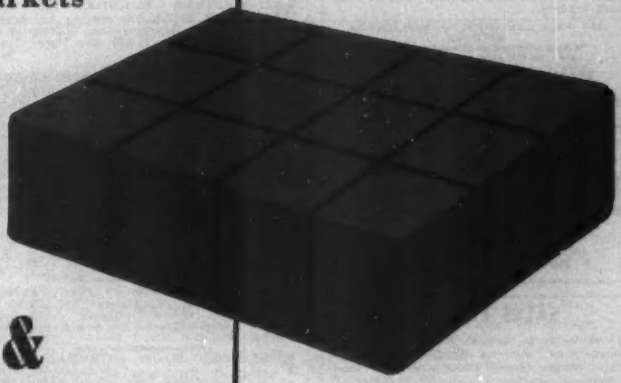
RAILWAY SUPPLY & MFG. CO.
10-100 Merchandise Mart
Chicago, Illinois

EASTERN SALES
JAMES T. FLANNERY CO.
26 Journal Square
Jersey City, N. J.

OTHER BRANCHES. ATLANTA MEMPHIS CHARLOTTE NEW YORK PHILADELPHIA DALLAS LOS ANGELES

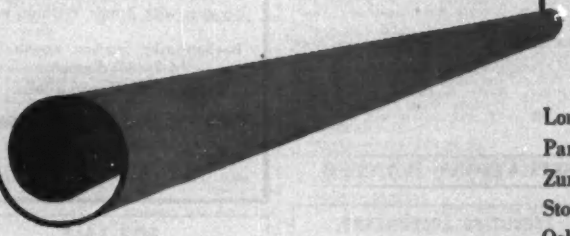
Lyddon & Co.

exporters of wood pulp
to all world markets



Parsons & Whittemore

paper exporters
wood pulp



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10 East 40th Street, New York 16, N.Y.

CLEARING HOUSE

HELP WANTED

MEN WANTED—POSITIONS OPEN

We can place—production manager Cylinder board mill, excellent salary; asst. supt. lightweight kraft carbonizing tissue; asst. supt. Cylinder board mill days also asst. supt. night work.

Master mechanics, draftsmen, designers, millwrights, mechanical engineers; bleach house foreman; pulp mill foreman rotating shift; receiver-shipper experienced in board mills; head beater engineer, salary $4500-$5000, also beater engineers; tour bosses, Cylinder, Fourdrinier and Yankee machines; chemists and chemical engineers salary range $3500-$8000; sales supervisors for New England mill, one to cover jobbers, the other chain stores; machine tenders and back tenders.

LIST YOUR CONFIDENTIAL APPLICATION WITH US

to keep informed of attractive positions open in the pulp and paper mills.

CHARLES P. RAYMOND SERVICE, Inc.
284 Washington St., Boston 8, Mass.
SPECIALISTS IN PLACING PULP AND PAPER MILL EXECUTIVES A-3

CHEMIST OR CHEMICAL ENGINEER

To do research and development work in Technical Service Department of leading specialty paper bag converter. Recent graduate acceptable.

Union Bag & Paper Corp.
Hudson Falls, New York A-10

SALES ENGINEER

Chemical or mechanical, with experience in sulphate mill recovery operations and equipment. Reply should include personal data, resume of experience, photo if available and telephone number. Our employees know of this advertisement. Write Box 51-397, c/o Paper Trade Journal. A-3

BOXBOARD MILL MANAGER

One machine mill located mid-west needs manager experienced all phases production high quality folding boxboards. Permanent position and good compensation for competent man qualified assume full responsibility. Reply in confidence. Box No. 51-378 care Paper Trade Journal. A-3

"WANTED PAPER MILL ENGINEER"

Established paper mill in central Wisconsin has opening on Engineering Staff for trained Civil Engineer. Experience desirable, but recent graduate will be considered.

Furnish references and details of experience and training. Excellent opportunity in a progressive organization. Address Box 51-381 care Paper Trade Journal A-10

AGGRESSIVE SALES ENGINEER

Opportunity to join well known established machinery firm. Technical ability and paper making background necessary. Knowledge of beating and pulping process and equipment desirable. Some sales experience or sales indoctrination helpful. Must be able to travel in territory. Tell us about yourself in your letter. Address Box 51-301 care Paper Trade Journal. TF

WANTED — Machine Tenders and Back Tenders for corrugating medium and liner mill, Fourdinier and cylinder machines. Located in Western Pennsylvania; good working conditions; pleasant surroundings and very good labor relations. Call collect—Tarentum 1470, TARENTUM PRODUCTS CORPORATION, Tarentum, Pa. TF

HELP WANTED

SALARIED POSITIONS $3,500 to $25,000. We offer the original personal employment service (established 41 years). Procedure of highest ethical standards is individualized to your personal requirements. Identity covered; present position protected. Ask for particulars. R. W. BIXBY, INC. —117 Dun Bldg., Buffalo, 2, N. Y. TF

SUPERINTENDENT for 2 machine paper mill in S.A., 35/40 yrs. old; excellent position. Submit resume. PERSONNEL SERVICE ASSOC., 115 State Street, Springfield, 3, Mass. A-3

MID-WESTERN FOURDRINIER SPECIALTY MILL has opening for experienced Production Superintendent. References required. Address Box 51-278 care Paper Trade Journal. A-31

WORKING SUPERINTENDENT for small fast growing Eastern mill making lightweight specialties. Cylinder machine experience essential. State qualifications and salary expected. Address Box 51-87 care Paper Trade Journal. TF

WANTED — Machine Tenders on Cylinder Machine in progressive test liner board mill making .016. Good opportunity for right man. Address Box 51-364 care Paper Trade Journal. A-3

WANTED—Back Tenders in mill making jute liner and corrugating medium. Good opportunity for advancement. Address Box 51-365 care Paper Trade Journal. A-3

WANTED—Tour Boss for .016 liner board mill making 70 tons per day. Must be capable. Give detailed experience and background. Address Box 51-366 care Paper Trade Journal. A-3

FINISHING ROOM FOREMAN experienced in flat-cutting and rewinding. Immediate employment, high salary. Address Box 51-370 care Paper Trade Journal. A-3

MASTER MECHANIC for progressive board mill. Good salary, good working conditions. Address Box 51-383 care Paper Trade Journal. A-10

TOUR BOSS for a high grade Board Mill located in the East. Must be able to handle men and get results. State experience and salary expected. Address Box 51-389 care Paper Trade Journal. A-17

SALESMAN, experienced selling paper bag and sack specialties to jobbers and large consumers. Represent large eastern mfr. Opportunity for go-getter. Advise teritory covered, salary and/or commission expected & other pertinent details. Address Box 51-391 care Paper Trade Journal. A-3

WANTED—Working Master Mechanic. Must be thoroughly experienced in paper mill operations and able to handle men and get work done. Will pay top salary to man meeting these requirements. Reply Sangamon Paper Mills, Inc., 137 W. Pershing Road, Chicago, 9, Ill. A-10

SITUATIONS WANTED

EXECUTIVE ACCOUNTANT COMPTROLLER

Capable, cost minded administrative executive, age 40, available immediately. Fully experienced in multi-plant paperboard, folding cartun and printing industry. Box 51-197, Paper Trade Journal. A-10

MAN WITH LONG EXPERIENCE in the paper industry line returning California August, would like to negotiate with firms who desire representation in the West. Address Box 51-385 care Paper Trade Journal. A-3

SITUATIONS WANTED

PAPER CONVERTING ENGINEER

with 6 years actual experience on bag, coating, waxing and printing equip. in design and maintenance, and 15 yrs. exp. machine and tool design. Age 46, married, energetic and efficient, good education, and would like to reside in the South West. Box 51-390 c/o Paper Trade Journal. A-10

SALESMAN—10 years experience selling to paper manufacturers. 5 years sales manager paper jobbing house. Wish to represent paper mill, converter or company serving paper manufacturers in Middle Western States. Address Box 51-354 care Paper Trade Journal. A-3

MECHANICAL ENGINEER—45. 24 years experience maintenance and construction work in pulp and paper mills. Wants position as Superintendent of Maintenance and construction department. Now employed. Reason for change strictly personal. Interested in permanent job only. Address Box 51-380 care Paper Trade Journal. A-3

POWER PLANT ENGINEER—10 years experience in operation and maintenance of all power plant equipment. Presently employed with well known firm. Can be available within two weeks. Address Box 51-395 care Paper Trade Journal. A-3

SUPERINTENDENT or PRODUCTION ENGINEER—A practical Paper Maker with engineering background with ability to upgrade and increase production. Accustomed to handling modern high speed cylinder paper machines. Address Box 51-394 care Paper Trade Journal. A-17

EXECUTIVE—Middle aged—wealth of experience on high grade rag and sulphite papers. Good educational background. Has also had considerable office experience including purchasing. Address Box 51-392 care Paper Trade Journal. A-17

BOARD MILL EXECUTIVE—Has built and remodeled board mills. Middle aged. Several years with engineering firm on Pacific Coast. Knows office practice. A thorough going board man, who knows his business. Address Box 51-393 care Paper Trade Journal. A-17

FOR SALE

FOR SALE

2 good used 8 plate Packer Screens with 3 new Witham vats

1—Sandusky Suction couch roll — 14-9/16" diameter — will take sheet 70" to 106"

EMPIRE BOX CORPORATION OF STROUDSBURG
Stroudsburg, Pa.
A-10

FOR SALE
BAG MACHINES

New — High Speed Flat & Square Type
Range 1¼ x 3¼ to 10½ x 16½.
Address Box 51-360 care Paper Trade Journal. A-10

FOR SALE—PAPER COATING RODS—Wire wound EQUALIZERS and blank rods. DE NEVE & CONSLER CO., Box 817, Rochester, 3, N. Y. A-3

FOR SALE

PAPER MILL EQUIPMENT

76" Cameron type 8 model 10 Slitter.
75" Moore & White Rewinding Reel.
52" Cameron type 8 model 5 Slitter.
48" Kidder type CH Rotary Slitter.
30" Hobbs shear cut Slitter.
42" Moore & White Sheeter with Layboy.
49" Finlay Sheeter with Hamblet single pile Layboy.
58" Finley Sheeter.
100" Dillon Sheeter with 10-roll Back-Stand.
38" Acme Automatic Power Paper Cutter.
#13 Industrial Paper Shredder.
NEW Hamblet Sheeters, any specification.
NEW Balers, both hand and power.

THOMAS W. HALL COMPANY, Inc.
120 West 42nd St., New York 18
(Plant at Stamford, Conn.)
TF

FOR SALE

PAPER COATING MACHINERY MANUFACTURERS — Waxing, Oiling, Cachon Laboratory Coating and Treating and Flat Ream Measuring and Converting Machines. New improvement. THE MAYER MACHINE COMPANY, INC., 1313 Buffalo Road, Rochester, 11, N. Y. TF

FOR SALE—Garment Bag Machine in perfect condition, making bags from 30 in. up to 60 in. long. Can be seen in operation. Reasonable. Address Box 51-372 care Paper Trade Journal. A-3

FOR SALE—56" type 26-3AL Cameron, 2 years old. Ready for shipment or inspection. Address Box 51-387 care Paper Trade Journal. A-3

FOR SALE—1—122" Heavy Duty Single Knife Horne Cutter, suitable for Board or Pulp. Address Box 51-275 care Paper Trade Journal. TF

WANTED

WANTED
Serviceable Grocery Bag Machine
8 through 20 lb. sizes.
Recent Model Potdevin preferred.
Address Box 51-346, care Paper Trade Journal. TF

WANTED—Brightwood Box Machine, Shredders, Evaporators, Generators and Boilers, Slitters, Cutters, Hydraulic presses, Sheridan Presses, Dryers. Address Box 51-88 care Paper Trade Journal. TF

WANTED—W & P Shredders, Evaporators, Generators and Boilers, Slitters, Cutters, Hydraulic presses, Sheridan Presses, Dryers. Address Box 51-89 care Paper Trade Journal. TF

WANTED—Used Toilet Tissue Wrapper. State full details and price. Address Box 51-396 care Paper Trade Journal. A-3

MACHINERY WANTED FOR OUTRIGHT PURCHASE
Paper Machines, Pulp and Paper Mill Machinery and Converting Equipment.

BEATERS
1—Ditts 700 lb. Iron Tub. Roll 44" face x 50" diameter.
1—Downingtown 1000 lb. Iron Tub. New roll 49" face x 48" diameter.

BELTING—NEW
57 feet 5" 15 ply Goodyear Rubber Belting.
100 feet 8" 4 ply Oliver Duck Transmission belt.

CALENDER ROLLS
48 Chilled Iron Rolls—Assorted sizes.

CALENDER STACKS
1—5 roll—62".
1—3 roll—62". All rolls bored for steam.
1—Lobdell 6 roll 126" Calender Stack, with doctors and drives.
1—Farrel Birmingham 110" Calender Stack with doctors. 2 rolls bored for steam.
1—S-C 72" trim 9 roll with doctors, lovers and drives. 3 roll bored for steam.

COMBINING MACHINE
1—Black Clawson 54" Combining Machine with 4—48" diameter and 1—24" diameter Dryers. Motor, pumps, tanks, etc. Complete.

CONVEYOR
1—19½ ft. long x 30" wide—with motor.

CYLINDER MOLDS
1—120" face x 36" diameter, with stainless steel shafts.

DRYERS
3—124" face x 48" diameter.
1—77" face x 49" diameter—with gear.
1—128" face x 16" diameter—Baby Dryer.
1—99" face x 36" diameter.
1—100" face x 49" diameter, with bearings.
3—160" face x 62" diameter—with gears and bearings.
3—110" face x 42" diameter with bearings and gears.
1—117" face x 48" diameter.
1—100" face x 42" diameter Creping Dryer.
4—42" face x 36" diameter, with frames, gears and bearings.
10—96" face x 48" diameter, with gears, bearings and steam joints.

EXTRACTOR ROLLS
1—Downingtown Extractor Roll 128" face x 54" diameter. Anti friction bearings.

FILTER PRESS
1—New Sperry filter press, size 12, type 41.

FILTERS
1—Oliver Vacuum Filters. Cylinder 10' face x 9'9" diameter. Steel vat. 1200 GPM capacity.
1—Oliver Vacuum Filter. Cylinder 8' face x 5' 6" diameter. Iron and vat.

FLAT SCREENS
2—8 plate Sandy Hill Roller Shoe with scrapers.
1—Harmon 12 plate.
1—Sandy Hill 12 plate roller shoe.
3—Bagley & Sewall 8 plate, with scrapers and plates.

HYDRAULIC PRESS
1—Thorpe 200 ton. Steam platens. 40"x40" with pump.

JORDANS
1—25 Sliscol, for motor drive.
1—Jones Majestic with base and coupling—
1—25 Academe with base and coupling.
1— Jones Majestic. Stainless Steel Filling.

MOTORS
1—Allis Chalmers 30 h.p. 440 v. 600 r.p.m.
1—Allis Chalmers 25 h.p. 440 v. 850 r.p.m.
25 others 440 v. motors from 3 h.p. to 15 h.p.

PULP EQUIPMENT
1—Mitts & Merrill #17 Pulpwood chipper.
1—Bird ball bearing Pulp Screen. Practically new. Used 6 months.
4—APREW Ball Bearing Pulp Screens—60 ton capacity.

PULPERS
2—22 Lamson.

PUMPS
44—Centrifugal Pumps, open & closed impellers. Direct connected or belt driven. Extended base for motor. Assorted capacities and heads. Most used less than one year. Also new Goulds Pumps.

REDUCERS
1—Link Belt 40 h.p. Ratio 2.5-1. 850 r.p.m.-227 r.p.m.

ROLLS—PRESS, COUCH, etc.
32—Press rolls, brass and rubber covered.
14—Couch rolls, brass and rubber covered.
250—Brass and steel carrying rolls.

ROTARY SCREENS
1—22A Bird, fully rebuilt with new vats, plates, etc.—motorized drive.
1—22 Bird—stainless steel vat.

SAVEALLS
1—Oliver Vacuum type, cylinder 120" face x 60" diameter, with steel vat.

SCREW PRESSES
1—Valley Voith Screw Press Size 2.

SHEETERS
1—48" Kidder Spot Sheeter.
1—64" Dexter Sheeter with 12 roll Stock Stand.
1—Moore & White 81" with Erb Layboy and 10 roll backstand.

SHREDDERS
1—American 27" Hammermill, anti-friction bearings.
1—Jeffrey 28½" Knives—7 knife rotor—4 knife bed plate. Ball bearing.

SLITTERS AND WINDERS
1—Beloit 120" Paper Machine Slitter and Rewinder—42" rewind.
1—Nadeau Sharp 98" Wax roll slitter and rewinder.
1—Langston 48" shear cut with motor and 20 sets of slitters.
7—Cameron 42" Type 6.
3—Miami 42".

STEAM TURBINES
1—De Laval 225 h.p. Initial pressure 140 p.s.i. Exhaust pressure 30 p.s.i. Complete with gear reducer.
1—De Laval Variable speed—375 h.p. at 185 psi and 30 p.s.i. exhaust. Complete with gear reducer.

STOCK PUMPS
1—Sharlo 10 x 20 Single Plunger Pump.

STOCK REGULATORS
3—Moritt Stock Regulators.

SUCTION PRESS ROLLS
1—Sandusky 97" drilled face x 14" diameter.

THICKENER
1—Woods Thickener with anti friction bearing. Cylinder 40" diameter x 132" face.

TOILET TISSUE PERFORATOR
1—Paper Converting Machine Co. automatic 81" Perforator, slitter and Winder—with three motors—ball bearing.

VACUUM PUMPS
1—Nash H-5 Vacuum Pumps
2—Nash #4.
2—Nash #3.
1—Nash #2.

WATER FINISH UNIT
1—Valley Micronized Unit for water finish on paper—120" double.

WAXING MACHINES
1—64" Potdevin complete from 1st off to single roll rewind section.
1—52" Special—complete from 2 roll 1st off to single roll rewind.

WHY LIST YOUR EQUIPMENT? — WE WILL BUY IT.

FOR SALE

FOR SALE

WANTED

REBUILT ELECTRICAL MACHINERY

AC MOTORS (3 ph. 60 cy.)

HP	Make	Wdg	Spd.	Type
400	G.E.	G.E.	450	RT
300	G.E.	G.E.	450	RT
200	G.E.	G.E.	600	IR
150	Westl.	Wstl.	577	
125	G.E.	G.E.	450	I M
100	Allis.	G.C.	720	ARX
100	Westl.	Wstl.	900	
100	G.E.	G.E.	1750	IK
100	Westl.	G.C.	1200	CS
75	Westl.	G.C.	900	CS
75	G.E.	G.E.	720	ITC
60	Westl.	G.C.	1750	CS
50	Westl.	G.E.	575	CW
4-50	G.E.	G.C.	1750	RT
40	G.E.	G.E.	900	RT
30	Vert. G.E.	G.C.	1150	RT536
25	60 v. Westl.	G.C.	1750	CS305
25	Gr. Wk.	G.C.	900	
25	Westl.	G.C.	1750	CS
15	Al. Ch. (new)	G.C. (Hi-Torq) 1665		ARWHH
20	Westl.	G.C.	1750	CS

HP	Make	Wdg	Spd.	Type
10	Westl.	G.C.	575	CS305
10(H)	Al.Ch.	G.C.	575	ARY
10	Westl.	G.C.	1750	CS57305
7½ (3)	Al.Ch.	G.C.	570	ARY
7½	G.E.	G.C.	1800	RT
7½	Westl.	G.E.	3440	CS3405Y
5	Westl.	G.C.	1760	CS
5/11½	L.A.	G.C.	880/1760	2058
5	Reeves	G.C.	1125/57	PA
5	Barke	G.C.	420	KM2
5	Westl.	G.C.	1750	CS
3	550v. Westl.	G.C.	1750	CS234

TRANSFORMERS

KVA	MAKE	PRI.	SEC.
1000 (3 PH)	G.E.	22000	2200
500	Westl.	22000	2200
250	Al.Ch.	22000	2200
50	Westl.	2300	110/220

Send us your inquiries for any POWER EQUIPMENT you may require

MOORHEAD ELECTRICAL MACHINERY CO.

OAKDALE, PA., Pittsburgh District — Pittsburgh Tele. WAlnut 1-4300 — M-4

WANTED TO BUY

Small, one or two machine mill for manufacture of board. Box No. 51-398, c/o Paper Trade Journal. A-24

SOUTHERN KRAFT MILL REJECTS AT PRICES IN EXCESS OF FIBRE VALUE
WIDTHS: 12" to 72"
WEIGHTS: 30# to 120#
DIAMETER: 9" to 20"
CONSIDER US BEFORE RE-PULPING YOUR REJECTS.
J. J. LEVIS PAPER CO., INC.
LAWRENCE, MASSACHUSETTS A-3

WANTED — Paster for laminating paper board two and three ply. Any width 50 inches to 72 inches. Give full description and price first letter. Immediate delivery. Address Box 51-376 care Paper Trade Journal. A-3

WANTED—Bird Savell #6. Must be in good condition. Advise price and location. Reply Sangamon Paper Mills, Inc., 137 West Pershing Road, Chicago, 9, Ill. A-10

BUY U. S. SAVINGS BONDS

FOR SALE

CALENDER ROLLS
Rolls 64", 76", 80", 84", 87", 124". Diameters vary from 8" to 16"

CHIPPER
1—8 knife, 88" chipper, new Murray disc and spout in 1940
2—Carthage 4 knife, 88" chippers

CONE PULLEYS

Dia.	Face	Bore	Type Spoke
1—34-5/8" x 25-7/8"	21-3/16"	4-3/8"	Single
1—26-15/16" x 26-11/16"	30-1/4"	4-7/16"	Double
1—27" x 26-3/8"	24"	4-1/2"	Double
1—26-9/16" x 28-3/16"	26-1/4"	4-7/16"	Double
1—33-5/16" x 34-3/4"	24"	4"	Single
1—27-1/2" x 28-5/8"	20-3/16"	3-15/16"	Double
1—26-11/16" x 28-1/4"	24"	3-7/16"	Single
1—25-15/16" x 27-11/16"	30"	4-3/16"	Double
1—34-1/16" x 35-15/16"	30"	3-15/16"	Double
1—44-1/4" x 45-5/8"	24"	4-3/16"	Single
1—47-3/16" x 48-5/8"	20-1/4"		Single
1—44-3/8" x 45-3/4"	24"	4-1/16"	Single
1—33" x 34-5/8"	20"	4"	Single
1—29-9/16" x 31-5/16"	30"	3-7/8"	Double
1—29-11/16" x 31-1/2"	30"	3-7/8"	Double
1—33-1/2" x 35-5/16"	30"	3-13/16"	Double

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1—36 x 88
1—48 x 90

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2—3 A Bird Screens
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1—Packer eight plate screen
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1—6 x 12 Duplex Plunger Pump
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American Cyanamid Company, Calco Chemical Div.
Bunge Pulp & Paper Co.
Ciba Company
E. I. du Pont de Nemours & Co., Inc.
Geigy Co., The
General Dyestuffs Corp.
National Aniline Division, Allied Chemical & Dye Corp.

ELECTRIC HYGROMETER
Thwing-Albert Instrument Co.

EMBOSSING MACHINES
Dilts Machine Works
Egan, Frank W., & Co.
John Waldron Corp.

EMBOSSING ROLLS
The Appleton Machine Co.
Gibbs-Brower Company, Inc.
Holyoke Machine Co.
Northern Engraving & Mch. Co.
B. F. Perkins & Son, Inc.
John Waldron Corp.
Wheeler Roll Co.

EMULSIFIERS
General Dyestuff Corp.
Nopco Chemical Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp.

ENZYMES
Rohm & Haas Co.
Vanderbilt Co., R. T.

EVAPORATORS
Davis Engrg. Corp.
Goslin-Birmingham Mfg. Co., Inc.
Murray, D. J., Mfg. Co.
Swenson Evaporator Co., Div. of Whiting Corp.

EXPANDERS
Mount Hope Machinery Co.

FANS
General Electric Co.
B. F. Perkins & Son, Inc.
Ross Engineering Co., J. O.

FEEDERS
Hoffi Company, Inc.
Merrick Scale Mfg. Co.
The Permutit Company
Stephens-Adamson Mfg. Co.

FELTS
Appleton Woolen Mills
Asten-Hill Mfg. Co.
Draper Bros. Corp.
Huyck & Son, F. C.
Lockport Felt Co.
Merey Paper Mill Supply Co.
Shuler & Benninghofen
Waterbury Felt Co.
Waterbury, H., & Sons Co.
Williams-Gray Co.

FELT CLEANERS
Calgon, Inc.
General Dyestuff Corp.
Nopco Chemical Co.

FELT CONDITIONERS
Bird Machine Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works

FELT GUIDES
Black Clawson Company
Frank W. Egan & Co.
Gilbert & Nash Co.
Moore & White Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John

FILLERS
American Cyanamid Company, Industrial Chemicals Division
A. M. Meincke & Son, Inc.
Vanderbilt Co., R. T.
Wyandotte Chemicals Corp., Michigan Alkali Div.

FILTERS
Bird Machine Company
Holyoke Machine Co.
J. M. Huber Corp.
Hungerford & Terry, Inc.
Johnson Corp.
Moore & White Co.
J. O. Ross Engrg. Corp.
The Sandy Hill Iron & Brass Works
Walworth Company

FITTINGS
The Bagley & Sewall Company
Crane Company
Shartle Bros. Mch. Co.
Walworth Company

FLEXIBLE COUPLINGS
Egan, Frank W., & Co.
Lovejoy Flexible Coupling Co.
John Waldron Corp.

FLOORING, GRATING AND TREADS
The Goodyear Tire & Rubber Company
Norton Co.

FLOW BOXES, STAINLESS-CLAD
Lukens Steel Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works

FORK LIFT TRUCKS
Clark Equipment Company Industrial Truck Division
Elwell Parker Elec. Co.
Towmotor Corp.

FORMATION TESTERS
Thwing-Albert Instrument Co.
Williams Apparatus Co., Inc.

FOURDRINIERS
Beloit Iron Works
Black Clawson Company
Downingtown Mfg. Co.
The Moore & White Co.
Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

FRIENESS TESTERS
Testing Machines, Inc.
Williams Apparatus Co.

FURNACES
Hoff Company, Inc.

GASKETS
The Goodyear Tire & Rubber Company

GEARS
The Bagley & Sewall Company
Black Clawson Company
De Laval Steam Turbine Co.
Downingtown Mfg. Co.
Frank W. Egan & Co.
Farrel-Birmingham Co.
E. D. Jones & Sons Co.
Moore & White Co.
D. J. Murray Mfg. Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Stroh Process Steel Co.
Valley Iron Works Co.
Westinghouse Electric Corp.
Western Gear Works

GRAPPLES
Blaw-Knox Company

GRAVITY FILTERS
Holyoke Machine Co.

GRINDERS
Carthage Machine Co.
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
Lobdell United Co.
Norton Company
Samuel C. Rogers and Company
The Sandy Hill Iron & Brass Works

GRINDING WHEELS
Norton Company
Simonds Abrasive Co.

GUIDES
The Bagley & Sewall Company
Egan, Frank W., & Co.
Gilbert & Nash Co.
The Moore & White Co.
Mount Hope Machinery Co.
Rice Barton Corporation
John Waldron Corp.

GUMMING MACHINES
Dilts Machine Works
Egan, Frank W., & Co.
The Sandy Hill Iron & Brass Works

GUMS
National Starch Products, Inc.
Stein-Hall Co., Inc.

HEAT EXCHANGERS AND RECOVERY SYSTEMS
Sickels Steam Specialties Co.
Westinghouse Electric Corp.

HEATING, VENTILATING & AIR CONDITIONING
The Appleton Machine Co.
E. D. Jones & Sons Co.
General Electric Co.
D. J. Murray Mfg. Co.
Red-Ray Mfg. Co., Inc.
Ross Engineering Corp., J. O.
Sickels Steam Specialties Co.
Valley Iron Works Co.

HOSE (Air, Water, Suction, etc.)
The Goodyear Tire & Rubber Company

HUMECTANTS
Aktivin Division, Heyden Chemical Corp.
Hopco Chemical Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

IMPREGNANTS
American Cyanamid Company Industrial Chemicals Division
B. F. Goodrich Chemical Co.

INDENTING MACHINES
Dilts Machine Works

INDUSTRIAL TRACTORS
Clark Equipment Company Industrial Truck Division
Towmotor Corp.

INKOMETER
Thwing-Albert Instrument Co.

INSTRUMENTS, TESTING AND MEASURING
Brown Instrument Co.
Bunge Pulp & Paper Co.
Cambridge Instrument Co.
General Electric Company
W. & L. E. Gurley
B. F. Perkins & Son
Photovolt Corp.
Taylor Instrument Cos.
Testing Machines, Inc.
Thwing-Albert Instrument Co.
Williams Apparatus Co.

JOINTS
The Bagley & Sewall Company
Beloit Iron Works
Johnson Corp.
Lovejoy Flexible Coupling Co.
Rice Barton Corporation
Shartle Bros. Mch. Co.
Appleton Machine Co.
Bahr Brothers Mfg. Co.
E. D. Jones & Sons Co.
Shartle Bros. Mch. Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

KNIVES
Black Clawson Company
Dilts Machine Works, Inc.
Hamblet Machine Co.
Heppenstall Company
E. D. Jones & Sons Co.
The Moore & White Co.
Simonds Saw & Steel Co.
Taylor Stiles & Co.
Valley Iron Works Co.

KRAFT WRAPPING PAPERS
Canadian Newsprint Supply Co.

LABORATORY CORRUGATOR
Thwing-Albert Instrument Co.

LABORATORY EQUIPMENT
Appleton Machine Co.
Bauer Brothers Co.
Bird Machine Company
Dilts Machine Works
W. & L. E. Gurley
Egan, Frank W., & Co.
E. D. Jones & Sons Co.
Taylor Instrument Companies
Testing Machines, Inc.
Valley Iron Works Co.
John Waldron Corp.
Williams Apparatus Co., Inc.

LAMINATING MACHINES
The Bagley & Sewall Company
Dilts Machine Works
Egan, Frank W., & Co.
Rice Barton Corporation
John Waldron Corp.

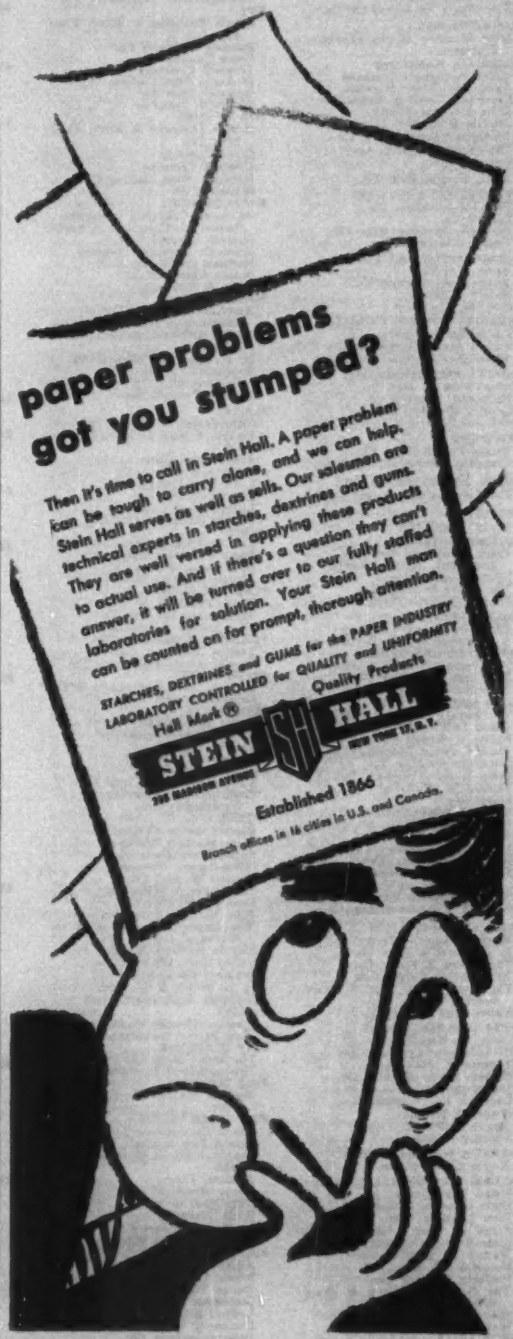
LAY BOYS
Dilts Machine Works
Gibbs-Brower Company, Inc.
Hamblet Machine Co.
Moore & White Co.

LIFT TRUCKS
Clark Equipment Company Industrial Truck Division

LINTER COTTON
Alpha Cellulose Corp.
Railway Supply & Mfg. Co.

LINTER PULP
Alpha Cellulose Corp.

LUBRICANTS
Gulf Refining Co.
Sinclair Refining Co.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Socony-Vacuum Oil Co.
Sun Oil Company
The Texas Company
Tide Water Associated Oil Co.

MAGAZINE REELS
Dilts Machine Works (Kohler Systems)

MATERIALS HANDLING
Clark Equipment Company
Industrial Truck Division
Cleveland Crane & Engrg. Co.
Dilts Machine Works
Shartle Bros. Mch. Co.
Stephens-Adamson Mfg. Co.
The Weltman Engrg. Co.

METAL TIRES
Stroh Process Steel Co.

MICROMETERS & CALIPERS
Farrel-Birmingham Co.
Lobdell Co.
Stephens-Adamson Mfg. Co.
Testing Machines, Inc.

MICRO-CRYSTALLINE WAXES
Barcco Oil Co.
Bunge Pulp & Paper Co.
Moore & Munger
Sun Oil Company

MOISTURE CONTENT CONTROL
Cambridge Instrument Co.
Stickle Steam Specialties Co.
Williams Apparatus Co., Inc.

MOTORS AND GENERATORS
Allis-Chalmers Mfg. Co.
Fairbanks, Morse & Co.
General Electric Company
Reliance Electric & Engrg. Co.

NEWSPRINT
Bunge Pulp & Paper Co.
Canadian Newsprint Supply Co.

NICKEL AND NICKEL ALLOYS
The International Nickel Co.

NOZZLES
Spray Engrg. Co.

PACKING BOXES
Clark Equipment Company
Industrial Truck Division
Johnson Corporation
The Moore & White Co.
Shartle Brothers Machine Co.

PALLET TRUCKS
Clark Equipment Company
Industrial Truck Division

PAPER MACHINE DRIVES
The Bagley & Sewall Company
Manchester Machine Co.
Rice Barton Corporation

PAPER MACHINES
The Bagley & Sewall Company
Beloit Iron Works
Bagley & Sewall Co.
Black Clawson Company
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Lakenweld
Moore & White Co.
Pusey & Jones Corp.
Rice Barton Corporation
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.

PAPER MACHINE SLICES
Black Clawson Company
E. D. Jones & Sons Co.
The Moore & White Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Valley Iron Works Co.

PAPER TUBE MACHINERY
Dietz Machine Works
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Hudson Sharp Machine Co.
Jagenberg-Werke Akt. Ges.
Langston Co., Samuel M.

PARAFFINE WAXES
Moore & Munger
Sun Oil Company

PARAFFIN WAX EMULSIONS
Nopco Chemical Co.

PASTING MACHINES
Beloit Iron Works
Black Clawson Company
Dilts Machine Wks.
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Murray, D. J., Mfg. Co.
Moore & White Co.
Potdevin Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John

PEBBLE MILLS
F. L. Smidth & Co.

PERFORATED METAL
Allis-Chalmers Mfg. Co.

pH METERS
Cambridge Instrument Co.
Taylor-Albert Instrument Co.

PIPE
Armco Drainage & Metal Products, Inc.
Babcock & Wilcox Co.
Crane Company
Grinnell Company
Michigan Steel Casting Co.
National Tube Co.
Walworth Company

PIPE FITTINGS
Armco Drainage & Metal Products, Inc.
Crane Company
Grinnell Company
Michigan Steel Casting Co.
Walworth Co.

PITCH CONTROL
American Cyanamid Company
Industrial Chemicals Division
General Dyestuff Corp.
Monsanto Chemical Company
National Aluminate Corp.
Nopco Chemical Co.
Rohm & Haas Co.

PLASTICIZERS
American Cyanamid Company
Industrial Chemicals Division
Akrivin Division, Heyden Chemical Corp.
B. F. Goodrich Chemical Co.
Naugatuck Chemical
Division of U. S. Rubber Co.
Nopco Chemical Co.

PLATERS
Gibbs-Brower Company, Inc.
Perkins & Son, Inc., B. F.

PLATES
Armco Steel Corp.
Babcock & Wilcox Co.
J. O. Ross Engrg. Corp.
Lukenweld Division
Lukens Steel Company
Timken Roller Bearing Co.

PLUGS
The Appleton Machine Co.
Black Clawson Company
E. D. Jones & Sons Co.
Shartle Brothers Machine Co.

POPE TYPE REELS
Egan, Frank W., & Co.
Manchester Machine Co.
Rice Barton Corporation

PRECISION SAMPLE CUTTER
Testing Machines, Inc.
Thwing-Albert Instrument Co.

PRESERVATIVES
E. I. du Pont de Nemours & Co.
General Dyestuff Corp.

PRESS ROLLS
Beloit Iron Works
Rice Barton Corporation

PRESSURE FILTERS
Holyoke Machine Co.

PRESSURE VESSELS
Chicago Bridge & Iron Co.
Combustion Engineering-Superheater, Inc.

PRESSES
Black Clawson Company
Dietz Machine Works
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
The Moore & White Co.
Potdevin Machine Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.
Waldron Corp., John
H. G. Weber & Co., Inc.
Williams Apparatus Co.

PULLEYS
Lovejoy Flexible Coupling Co.
Rice Barton Corporation

PULP CLASSIFIER
The Bauer Bros. Co.
Thwing-Albert Instrument Co.

PULP CLEANERS
Nichols Engrg. & Research Corp.

PULP STOCK VALVES
Crane Company
Record Fdy. & Mach. Co.
Shartle Brothers Machine Co.

PULPERS
Agmew, Inc.
Bauer Brothers Co.
Dilts Machine Works
E. D. Jones & Sons Co.
Morden Machines Co.
Shartle Brothers Machine Co.

PULPS
Alpha Cellulose Corp.
Brown Company
Bunge Pulp & Paper Co.
Cottonmass & Co., Inc.
Lyddon & Co. (America), Inc.
Parsons & Whittemore, Inc.
Perkins-Goodwin Co.
Price & Pierce, Ltd.
Pulp and Paper Trading Co.
Rentignache Co., Ltd.

PULPSTONES
Norton Company

PULP TESTERS
Paper and Pulp Testing Laboratories
Williams Apparatus Co., Inc.

PULVERIZING MILLS
Combustion Engineering-Superheater, Inc.
F. L. Smidth & Co.

PUMPS
Allis-Chalmers Mfg. Co.
Agmew, Inc.
The Bagley & Sewall Company
Beloit Iron Works
Black Clawson Company
Buffalo Pumps, Inc.
Byron Jackson Co.
DeLaval Steam Turbine Co.
Downingtown Mfg. Co.
Fairbanks, Morse & Co.
Gibbs-Brower Company, Inc.
Johnson Corp.
Moore & White Co.
Nash Engineering Co.
Roots Connersville Blower Corp.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.

RADIANT BURNERS
Red-Ray Mfg. Co., Inc.

RAG COOKING PROCESSES
The Kinsley Chemical Company
General Dyestuff Corp.
Rohm & Haas Co.

RAG CUTTERS
Gibbs-Brower Company, Inc.
B. F. Perkins & Son, Inc.
Taylor-Stiles & Co.

RECOVERY SYSTEMS
Babcock & Wilcox Co.
Chicago Bridge & Iron Co.
Combustion Engineering-Superheater, Inc.
Moore & White Co.
D. J. Murray Mfg. Co.
Pusey & Jones Corp.
Ross Engineering Corp., J. O.
Valley Iron Works Co.

REELS
The Appleton Machine Co.
The Bagley & Sewall Company
Beloit Iron Works
Black Clawson Company
Dilts Machine Works (Kohler Systems)
Egan, Frank W. & Co.
Downingtown Mfg. Co.
Moore & White Co.
Rice Barton Corporation
Rodney Hunt Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
The Smith & Winchester Mfg. Co.

REFINERS
Appleton Machine Co.
Baker Brothers Mfg. Co.
Bauer Brothers Co.
Dilts Machine Works
Gibbs-Brower Company, Inc.
E. D. Jones & Sons Co.
Mordon Machines Co.
Murray, D. J., Mfg. Co.
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Sprout Waldron & Co., Inc.
Sutherland Refiner Corp.
Valley Iron Works

REGULATORS
APMEW, Inc.
Allis-Chalmers Mfg. Co.
Bird Machine Company
General Electric Co.
Johnson Corp.
Shartle Brothers Machine Co.
Stickle Steam Specialties Co.
Taylor Instrument Companies

RESINS
American Cyanamid Company, Plastics & Resins Division
The Dow Chemical Company
B. F. Goodrich Chemical Co.
The Goodyear Tire & Rubber Company
Hercules Powder Co.
Monsanto Chemical Company
Naugatuck Chemical
Division of U. S. Rubber Co.
Nopco Chemical Co.
Pittsburgh Plate Glass Co.
Pittsburgh Plate Glass Co., Columbia-Southern Chemicals Corp.
Reichhold Chemicals, Inc.
Rohm & Haas Co., Resinous Products Div.

ROLLS
Appleton Machine Co.
The Bagley & Sewall Company
Beloit Iron Works
Black Clawson Company
Dilts Machine Works
Downingtown Mfg. Co.
Frank W. Egan & Co.
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
Holyoke Machine Co.
Lobdell United Co.
Edward J. McBride Co., Inc.
The Moore & White Co.
D. J. Murray Mfg. Co.
Perkins, B. F., & Sons Co.
Pusey & Jones Corp.
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
U. S. Rubber Co.
Valley Iron Works Co.
Waldron Corp., John
Wheeler Roll Co.

ROLL COVERS
The Goodyear Tire & Rubber Company

ROLL HANDLING EQUIPMENT
Dilts Machine Works (Kohler Systems)

ROLL STANDS
Cameron Machine Co.
Dilts Machine Works (Kohler Systems)
Frank W. Egan & Co.
Moore & White Co.
Potdevin Machine Co.
The Sandy Hill Iron & Brass Works
John Waldron Corp.
H. G. Weber & Co., Inc.

ROPE CARRIERS
Black Clawson Co.
The Moore & White Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works

ROTARY KILNS
F. L. Smidth & Co.

ROTARY STEAM JOINTS
Johnson Corp.
The Moore & White Co.
Rice Barton Corporation
Shartle Bros. Mch. Co.

RUBBER PRODUCTS
The Goodyear Tire & Rubber Company

SATURANTS
B. F. Goodrich Chemical Co.

SATURATING MACHINES
Dilts Machine Works
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Moore & White Co.
Potdevin Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John
Weber, Herman G.

SAVEALLS
Bird Machine Company
Chicago Bridge & Iron Co.

SAWS
Simonds Saw & Steel Co.

SCALES
Fairbanks, Morse & Co.
Merrick Scale Mfg. Co.
Testing Machines, Inc.

SCREEN PLATES
Bird Machine Company
Pittsburgh Screen Plate Co.
Magnus Metal Corp.
Morey Paper Mill Supply Co.
Testing Machines, Inc.

SCREENS
Allis-Chalmers Mfg. Co.
Appleton Wire Works
Appleton Machine Company
The Bagley & Sewall Company
Bird Machine Company
Carthage Machine Co.
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
E. D. Jones & Sons Co.
Moore & White Co.
D. J. Murray Mfg. Co.
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Stephens-Adamson Mfg. Co.
Valley Iron Works Co.

SHEET MACHINES
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Valley Iron Works Co.
Williams Apparatus Co., Inc.

SHEETERS
Jagenberg-Werke Akt. Ges.

SHOWER PIPES
Bird Machine Company
Downingtown Mfg. Co.
Moore & White Co.
Sandusky Fdy. & Mch. Co.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.

SHREDDERS
Bauer Brothers Co.
Carthage Machine Co.
Gibbs-Brower Company, Inc.

SIZE PRESSES
Manchester Machine Co.
Rice Barton Corporation

SIZING
American Cyanamid Company, Industrial Chemicals Division
The Dow Chemical Company
du Pont, E. I., de Nemours & Co.
Glidden Company
Hercules Powder Co.
The Hubinger Co.
Monsanto Chemical Company
National Aluminate Corp.
Nopco Chemical Co.
Stein-Hall Co., Inc.
Wyandotte Chemicals Corp., Michigan Alkali Div.

SIZING TESTER
W. & L. E. Gurley
Testing Machines, Inc.
Thwing-Albert Instrument Co.
Williams Apparatus Co., Inc.

SLIME CONTROL
The Dow Chemical Company
E. I. du Pont de Nemours & Co.
General Dyestuff Corp.
Monsanto Chemical Co.
National Aluminate Corp.
Rohm & Haas Co.
Vanderbilt Co., R. T.
Wyandotte Chemicals Corp., Michigan Alkali Div.

SLITTERS
The Bagley & Sewall Company
Black Clawson Company
Cameron Machine Co.
Carthage Machine Co.
Clark-Aiken Co.
Dietz Machine Works
Dilts Machine Works
Downingtown Mfg. Co.
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Graphic Arts International Corp.
Thomas W. Hall Co., Inc.
Hamblet Machine Co.
Jagenberg-Werke Akt. Ges.
Langston Co., Samuel M.
Moore & White Co.
D. J. Murray Mfg. Co.
Potdevin Machine Co.
Rice Barton Corporation
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Waldron Corp., John

SMOKE STACKS
Chicago Bridge & Iron Co.

SOFTNESS-STIFFNESS TESTER
W. & L. E. Gurley
Testing Machines, Inc.
Thwing-Albert Instrument Co.

SOLUBLE OILS
American Cyanamid Company, Industrial Chemicals Division
General Dyestuff Corp.
Nopco Chemical Co.

SPECIAL MACHINERY
Dilts Machine Works
Egan, Frank W., & Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
John Waldron Corp.

SPLICING TISSUE
Bunge Pulp & Paper Co.
Williams-Gray Co.

STAINLESS STEEL
Armco Steel Corp.
Michigan Steel Casting Co.
U. S. Steel Corp.

STARCH
A. M. Meincke & Son, Inc.
Clinton Foods, Inc.
The Hubinger Co.
National Starch Products Inc.
Stein-Hall Co., Inc.

STEAM JOINTS
The Moore & White Co.
Rice Barton Corporation
Shartle Bros. Mch. Co.

STEAM SPECIALTIES
Babcock & Wilcox Co.
Combustion Engrg. Co., Inc.
Johnson Corp.
Stickle Steam Specialties Co.

STEEL
Armco Steel Corp.
Carnegie Illinois Steel Co.
Lukens Steel Company
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works
U. S. Steel Corp.

STEEL, CLAD
Babcock & Wilcox Co.
Lukens Steel Company

STEEL TANKS
Chicago Bridge & Iron Co.
The Sandy Hill Iron & Brass Works

STRETCH TESTER
Thwing-Albert Instrument Co.

STUFF CHESTS
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
Rice Barton Corporation
Shartle Brothers Machine Co.
Valley Iron Works Co.

SUCTION BOXES
Black Clawson Company
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

SUCTION ROLLS
Beloit Iron Works

SULPHITE SPECIALTIES
Canadian Newsprint Supply Co.

SULPHUR
Texas Gulf Sulphur Co.

SULPHUR BURNERS
Valley Iron Works Co.

SULPHUR DIOXIDE
American Cyanamid Company, Calco Chemical Div.
Ansul Chemical Co.
Virginia Smelting Co.

SUPERCALENDERS
The Appleton Machine Co.
B. F. Perkins & Son, Inc.

SYNTHETIC LATICES
American Cyanamid Company Industrial Chemicals Division
B. F. Goodrich Chemical Co.
The Goodyear Tire & Rubber Company
Naugatuck Chemical Division of U. S. Rubber Co.
Nopco Chemical Co.

TAKE OFF UNITS
Dilts Machine Works (Kohler Systems)

TALC
American Cyanamid Company, Industrial Chemicals Division
Vanderbilt Co., R. T.

TANKS
Chicago Bridge & Iron Co.
Kalamazoo Tank & Silo Co.
B. F. Perkins & Sons, Inc.
J. O. Ross Engrg. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John

TEARING TESTERS
Thwing-Albert Instrument Co.
Testing Machines, Inc.

TENSILE TESTERS
Bunge Pulp & Paper Co.
Thwing-Albert Instrument Co.
B. F. Perkins & Son, Inc.
Testing Machines, Inc.
Nopco Chemical Co.

THICKENERS, DECKERS AND SAVEALLS
The Appleton Machine Co.
Bird Machine Company
Carthage Machine Co.
Chicago Bridge & Iron Co.
Dilts Machine Works
Downingtown Mfg. Co.
Moore & White Co.
D. J. Murray Mfg. Co.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

TITANIUM
American Cyanamid Co., Calco Chemical Div.
E. I. du Pont de Nemours & Co.
Titanium Pigment Co.
R. T. Vanderbilt Co.

TOOLS
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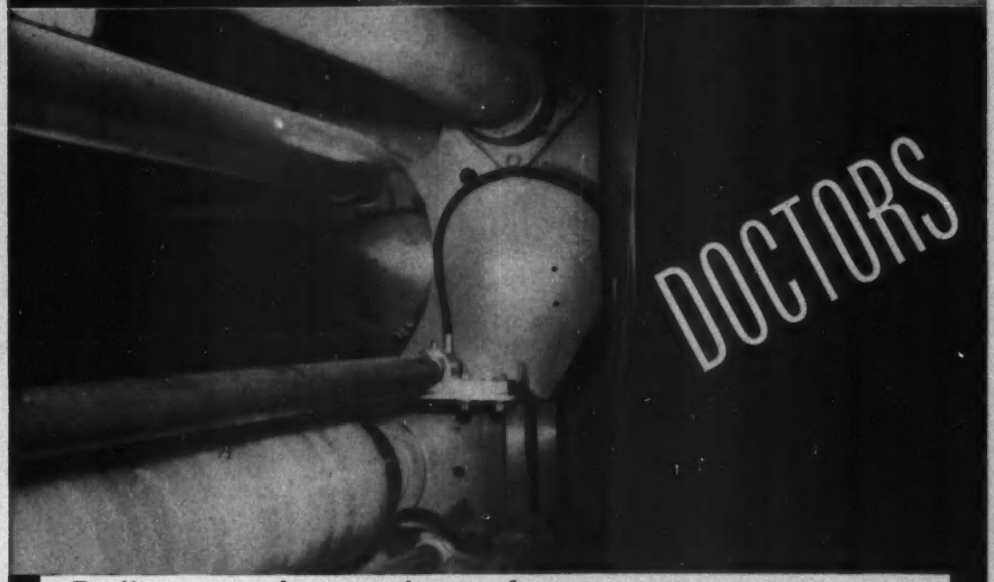

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